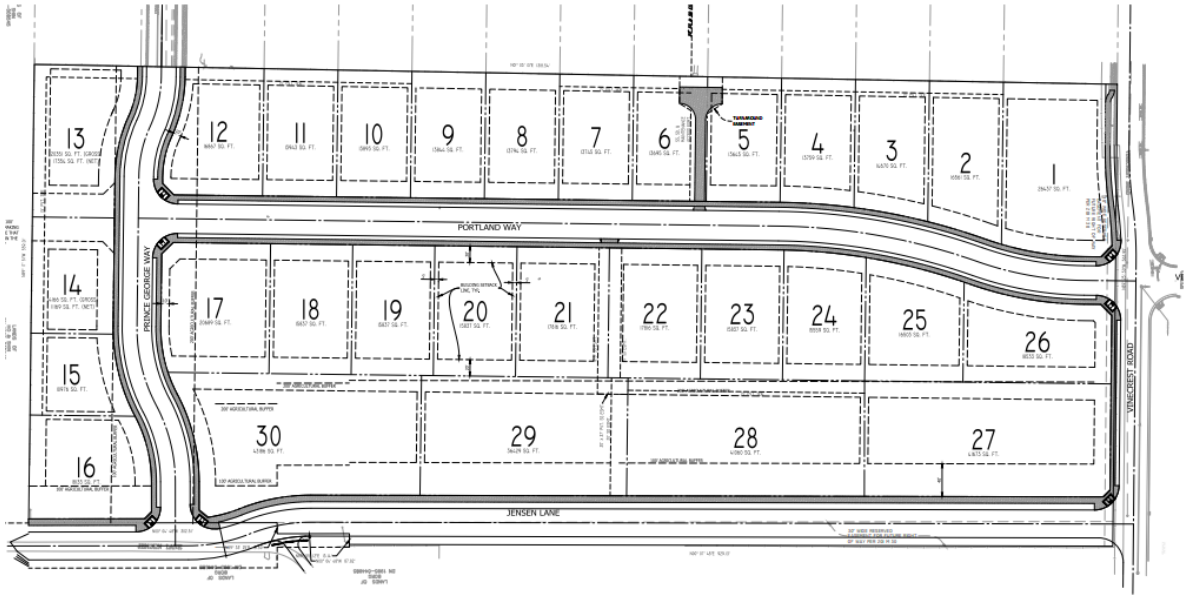

Estates at Ross Ranch

Initial Study

prepared by

Town of Windsor
Community Development Department
9291 Old Redwood Highway
Windsor, California 95492
Contact: Kimberly Jordan, Planner III

prepared with the assistance of

Rincon Consultants, Inc.
4825 J Street, Suite 200
Sacramento, California 95819

November 2021

RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
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Initial Study

1. Project Title

Estates at Ross Ranch

2. Lead Agency Name and Address

Town of Windsor
9291 Old Redwood Highway
Windsor, California 95492

3. Contact Person and Phone Number

Kimberly Jordan, Planner III
Town of Windsor, Planning Division
(707) 838-1000

4. Project Location

The project area is located in the northeastern portion of the Town of Windsor at 1295 Jensen Lane. The project area is approximately 17-acres and comprises Assessor's Parcel Number 162-020-004 (project site). The project site is located approximately one mile east of Highway 101. Figure 1 shows the location of the site in the region and Figure 2 depicts the project area boundaries. The project area eastern and southern boundaries comprise the Town limit lines.

5. Project Sponsor's Name and Address

Pink Viking Returns, LLC
400 College Avenue
Santa Rosa, California 95401

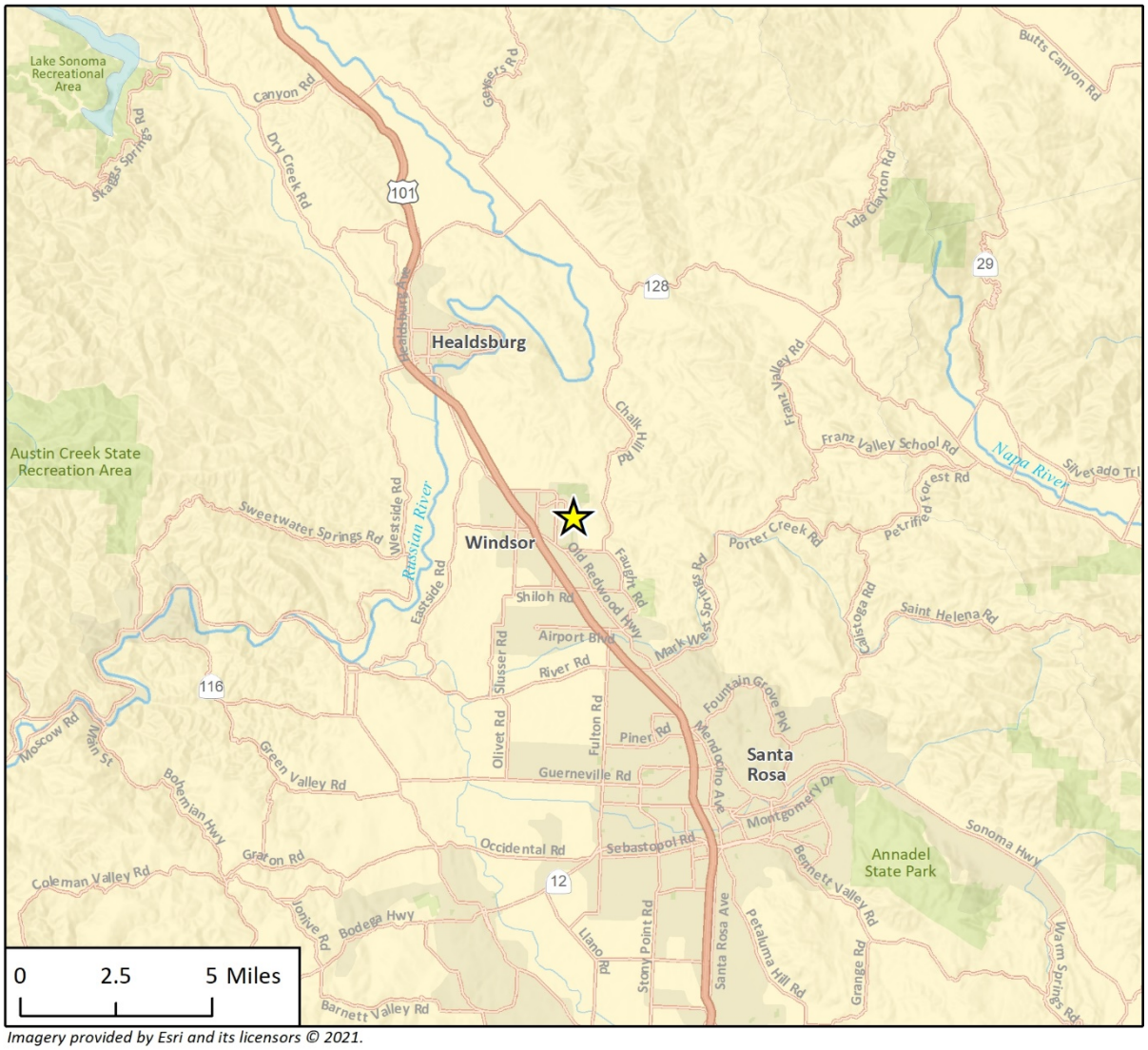
6. 2040 General Plan Designation

The project site is designated Estate Residential (ER) in the 2040 2040 General Plan (Town of Windsor 2018). The project is located in the Eastern Edge 2040 General Plan Community Place area. The project site also has a Potential School site designation.

7. Zoning

The project site is zoned Estate Residential (ER).

Figure 1 Regional Location



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Project Location

N



Figure 2 Project Site



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8. Description of Project

The project is a subdivision of a 17.17-acre parcel (Assessor's Parcel Number 162-020-004) located at 1295 Jensen Lane in the northeastern corner of the Town of Windsor. The project would subdivide the site for 30 single family lots. Four of the 30 lots would not be buildable until the properties to the south of the site, which are in the County of Sonoma , are annexed into the Town and are no longer used for agriculture. This document conservatively analyzes the site for a total of 30 lots. Subdivided lots would range in size from approximately 10,976 to 43,186 square feet. The average lot size would be approximately 19,370 square feet. Location of individual lots is shown in Figure 3. Water and sewer for the site would be provided by the Town of Windsor and all utilities would be underground. All structures, wells, septic tanks, and fences (with exception of the westerly fence along the Vintage Hills lots) on the site would be removed as part of the project. All residences would be required to have solar panels in adherence to the 2019 Building Energy Efficiency Standards Title 24.

The project would include a 100-foot agricultural buffer along the southern and eastern boundaries of the project site. The Town of Windsor Zoning Ordinance requires an agricultural buffer when a property is zoned for or being used as agriculture. The Town requires a buffer of 200-feet, but allows the width of the buffer to be reduced to a minimum of 100-feet in certain circumstances with Town Council approval. Lots 13, 14, 15, and 16 along the southern portion of the project site and near the existing vineyard would not be developed until the parcels to the south are annexed to the Town and are no longer used for agriculture.

Site Access and Circulation

The project site would be accessible via Vinecrest Road to the north and the construction of a new section of Jensen Lane to the east. The project would also include an extension of Prince George Way to the west until the road extension would intersect with new section of Jensen Lane, as shown in Figure 3. Portland Way, a proposed roadway, would bisect the project site from north to south and connect to Vinecrest Road and Prince George Way. Sidewalks would be constructed along proposed roadways on the project site.

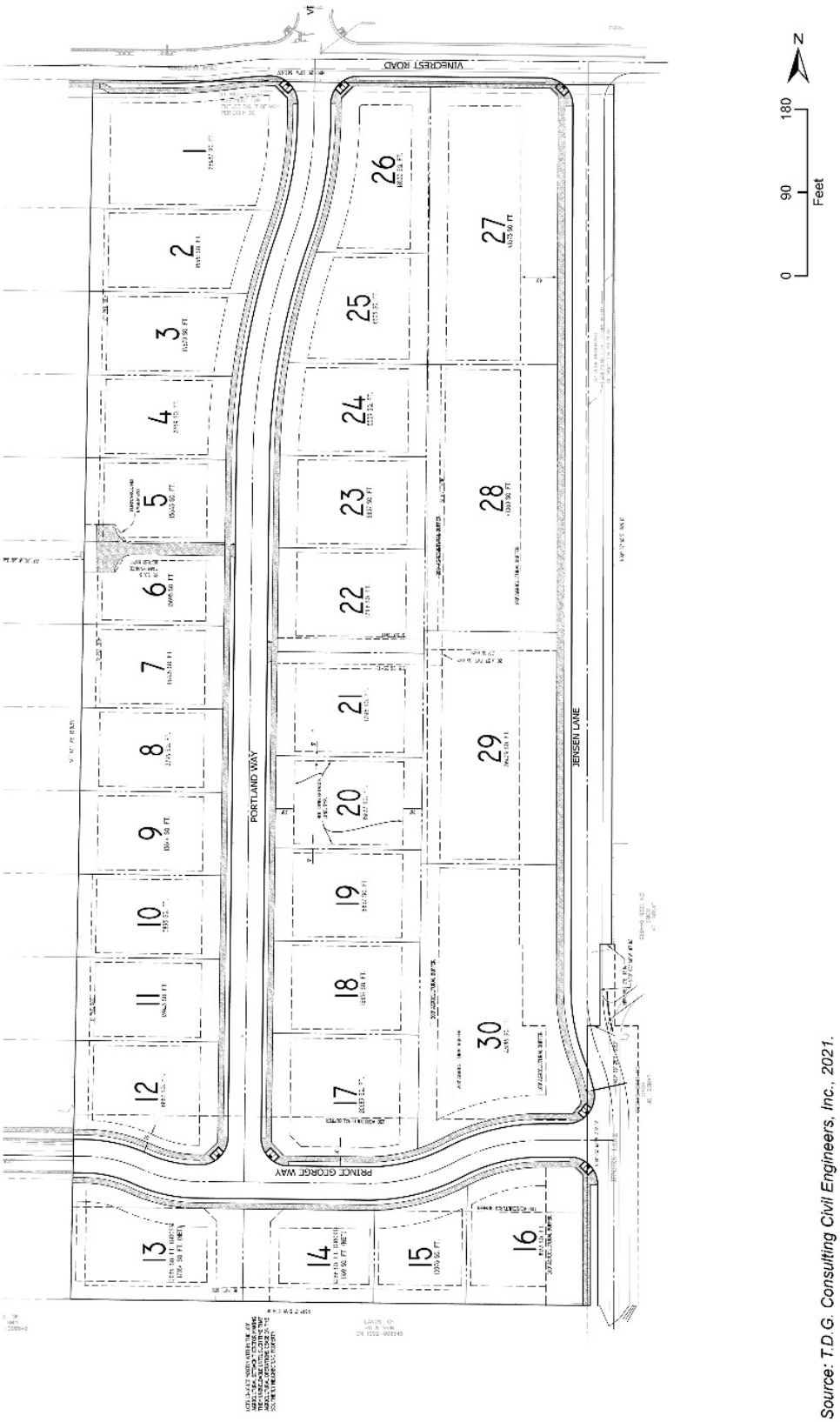
Drainage

Lot drainage would be conveyed to the public storm drain system and would be designed pursuant to Town of Windsor and Sonoma Water Standards. The project would also be designed per the current City of Santa Rosa Low Impact Development Design Manual. Project runoff would not be allowed onto adjacent properties. Bioretention basins would be constructed along interior roadways with a six-inch solid pipe to connect to a downstream bioretention basin. See Figure 4 for project drainage plan.

Landscaping

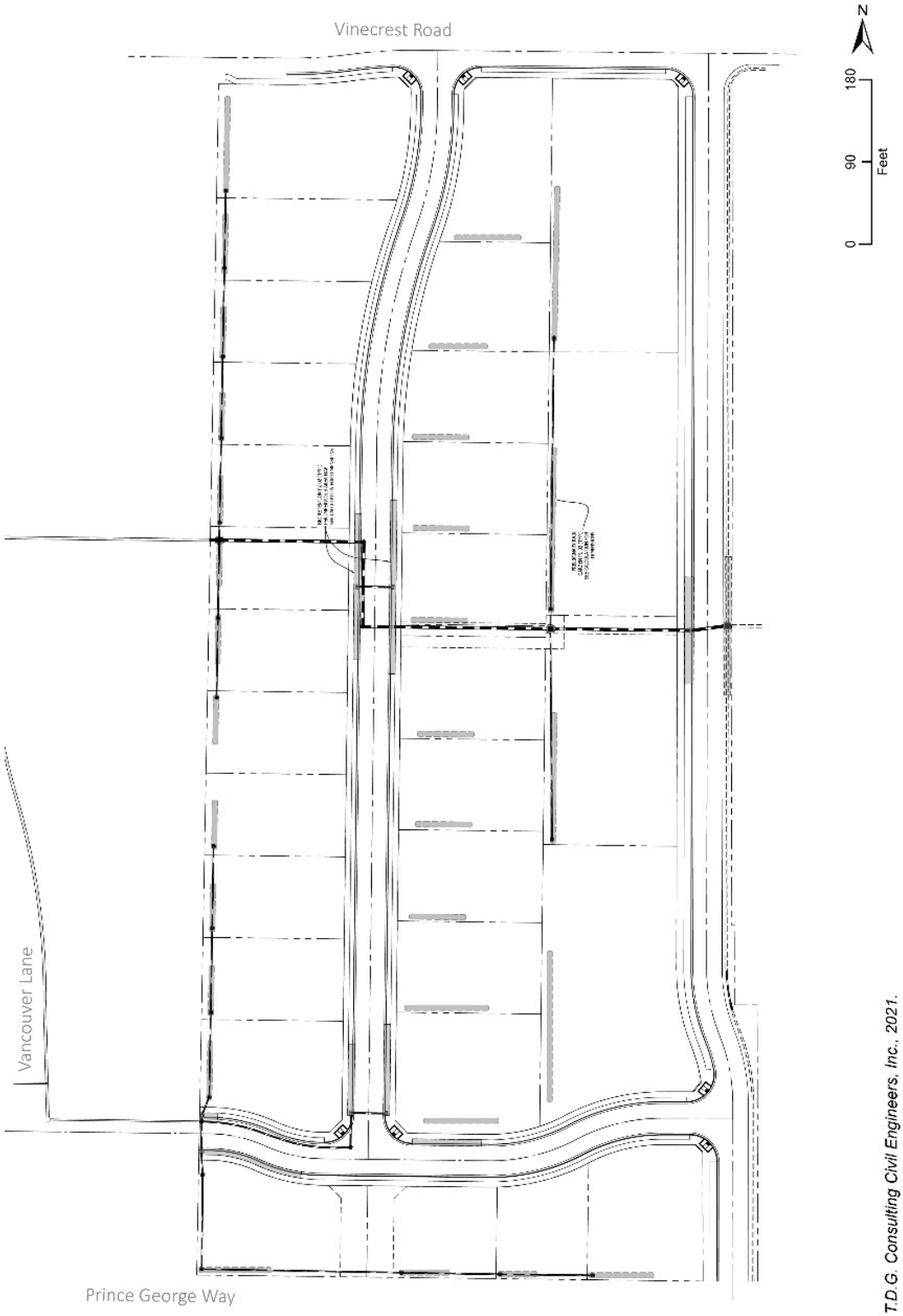
Tree removal and grading would be limited to roadways to construct street improvements and rear lot swales to prevent storm water flows onto neighboring properties. Tree preservation, or removal, and grading on individual lots would be performed as part of each lot's individual building permit. Street trees would be planted along proposed roadways throughout the project site.

Figure 3 Project Site Plans



Source: T.D.G. Consulting Civil Engineers, Inc., 2021.

Figure 4 Project Drainage Plan



Source: T.D.G. Consulting Civil Engineers, Inc., 2021.

9. Surrounding Land Uses and Setting

The project site is mostly vacant with an existing single-family residence located on the southern portion of the parcel. The site was previously cultivated as a vineyard, which has since been removed, and includes numerous eucalyptus, pine, acacia, valley oak, black oak, California bay laurel, and coast live oak trees that were planted near the residence. The site gradually slopes westerly, and the majority of the site is covered in non-native grassland that has been grazed and tilled. Wetlands are present throughout the northern and southwest corner of the site.

As shown in Figure 2, the project site is bordered by Vincrest Road to the north. Jensen Lane is located adjacent and southeast of the site as an unimproved driveway and is not a public roadway as shown in Figure 5. Agricultural land surrounds the site to the south and east and single-family residences are located north and west.

10. Other Public Agencies Whose Approval is Required

The Town of Windsor is the lead agency with responsibility for approving the project. Approval from other public agencies is not required.

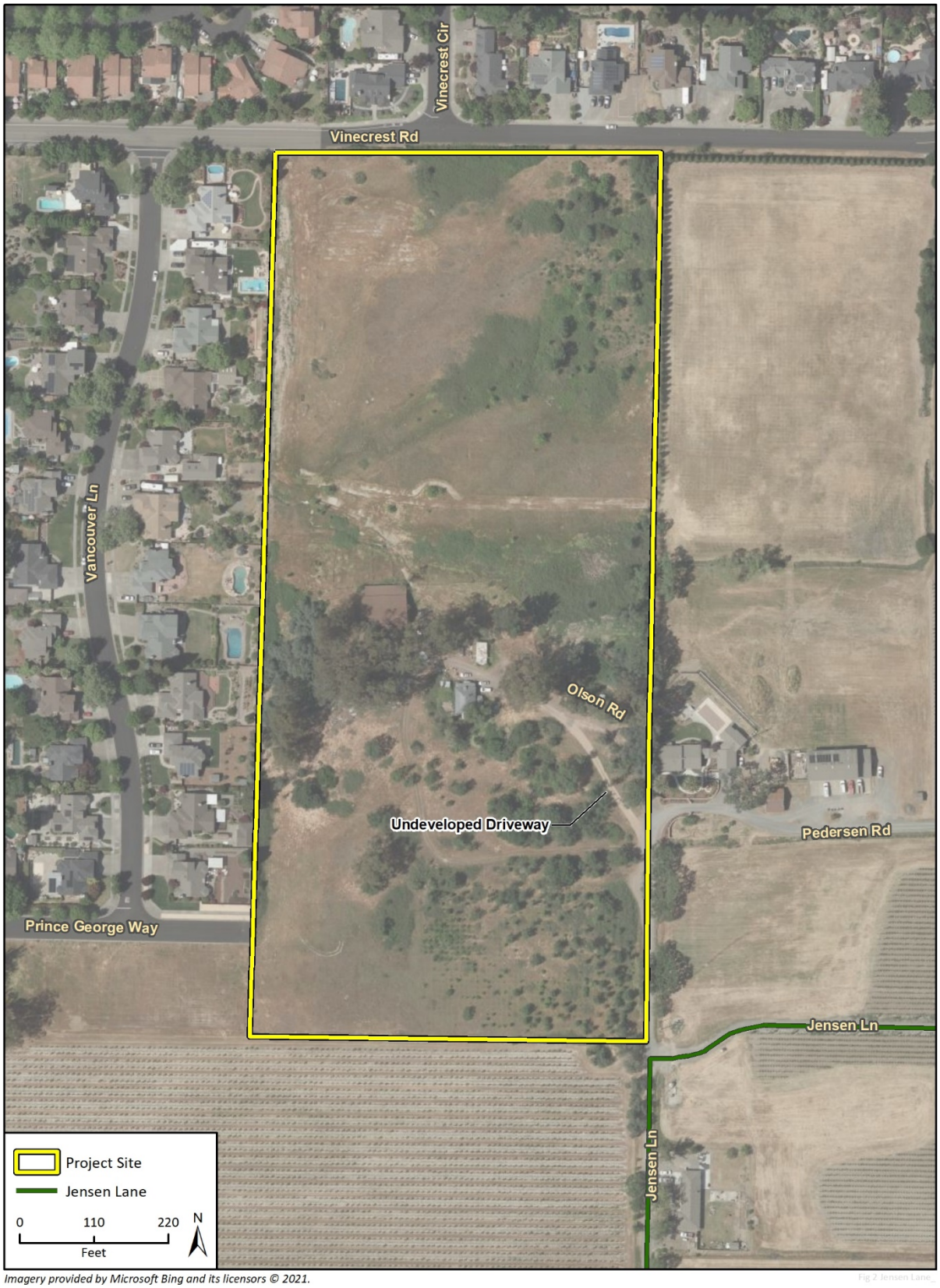
The project would require the following discretionary approvals from the Town of Windsor:

- Approval of a Tentative Subdivision Map
- Approval of a reduced agricultural buffer

11. Have California Native American Tribes Traditionally and Culturally Affiliated with the Project Area Requested Consultation Pursuant to Public Resources Code Section 21080.3.1?

The Town has not received requests from California Native American tribes for consultation on the project, pursuant to Public Resources Code (PRC) Section 21080.3.1

Figure 5 Jensen Lane Extension



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12. Relationship of Proposed Project to Previous EIR Analysis

The Town of Windsor adopted the current 2040 General Plan on April 4, 2018 as an update to the Town's 1996 General Plan. The 2040 General Plan includes goals and policies that convey the Town's long-term vision and guide local decision making to reach that vision. The 2040 General Plan EIR was certified in 2018 and assesses impacts from implementation of the 2040 General Plan. Both the 2040 General Plan and 2040 General Plan EIR are available on the Town's website located at: https://www.townofwindsor.com/843/Planning-Documents

The purpose of this Initial Study is to assess consistency between the project and 2040 General Plan and to compare the project effects to those analyzed in the 2040 General Plan EIR to determine if additional environmental review is required under CEQA in accordance with *CEQA Guidelines* Section 15183. This document applies project specific analysis as described under Section 8, Description of Project, above to determine if a Supplemental or Subsequent Environmental Impact Report (ERI) should be prepared for the project. The CEQA baseline for this analysis is the maximum allowable development on the project site allowed under the 2040 General Plan.

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Environmental Factors Potentially Affected

This project would potentially affect the environmental factors checked below, involving at least one impact that is "Potentially Significant" or "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

☐	Aesthetics	☐	Agriculture and Forestry Resources	☐	Air Quality
■	Biological Resources	■	Cultural Resources	☐	Energy
☐	Geology and Soils	☐	Greenhouse Gas Emissions	■	Hazards and Hazardous Materials
☐	Hydrology and Water Quality	☐	Land Use and Planning	☐	Mineral Resources
☐	Noise	☐	Population and Housing	☐	Public Services
☐	Recreation	■	Transportation	■	Tribal Cultural Resources
☐	Utilities/Service Systems	■	Wildfire	■	Mandatory Findings of Significance

Determination

Based on this initial evaluation:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

■ I find that the proposed project MAY have a "potentially significant impact" or "less than significant with mitigation incorporated" impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. A SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potential significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature

11.22.2021
Date

Kimberly Jordan
Printed Name

Planner III
Title

Environmental Checklist

1 Aesthetics

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Except as provided in Public Resources Code Section 21099, would the project:					
a. Have a substantial adverse effect on a scenic vista?	☐	☐	☐	■	☐
b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☐	■
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☐	■	☐

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	☐	☐	☐	■	☐

Impacts to aesthetics were analyzed on pages 49 through 64 of the 2040 General Plan EIR. Aesthetic impacts related to scenic vistas, scenic resources, and visual character were determined to be less than significant, while impacts related to light and glare were determined to be less than significant with incorporation of mitigation to update Land Use Policy LU-1.13.[1]

a. Would the project have a substantial adverse effect on a scenic vista?

Windsor is located between the Mayacamas mountain range in the east and the Coastal Range ridgeline to the north, which forms a scenic backdrop for the Town. The ridgeline to the east slopes to a peak at a 700-foot elevation and the northern ridgeline rises approximately 60 feet above the plain floor. The Town considers these mountain ranges to be a scenic vista. Jensen Lane is also considered a scenic corridor in the 2040 General Plan, specifically the entirety of the north-south segment of the roadway. The project proposes to subdivide the site for 30 single family lots. Although, the design of proposed individual residences is not known at this time, the project would be required to comply with 2040 General Plan Policies LU-1.7 and LU-1.8 requiring compatible design for new residential development including compatibility with scale, mass, and height of the surrounding residencies. Existing residencies located west and north of the project site range from one to two stories and reach a height of approximately 35 feet. The proposed single-family residences would have a similar height to the surrounding residences and thus would not be tall enough to significantly obstruct views of the surrounding mountain ranges.

Additionally, the project would comply with 2040 General Plan Policies ER-9.2 and ER-9.3 that would ensure project design features do not detract from public views, including those along Jensen Lane, and preserve significant public views of the surrounding lands. The project would not have a substantial effect on the views of surrounding mountain ranges, thus, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

[1] All 2040 General Plan policies referenced in the Initial Study are included with full policy language in Appendix E.

b. Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Although the Town of Windsor recognizes several scenic corridors, including Jensen Lane, there are no State-designated scenic highways within the Town of Windsor (California Department of Transportation [Caltrans] 2018). The nearest eligible scenic highway to the project site is State Route 12, located approximately 12 miles to the southeast in Santa Rosa. There are no scenic highways within the scope of the project*, therefore the project would have no impact to scenic highways.* The project would not have a substantial effect on the surrounding scenic corridors that includes mountain ranges and agricultural lands, thus, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

c. Would the project, in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

As described in the 2040 General Plan EIR, all new development occurring pursuant to the 2040 General Plan is subject to existing design, density, and height standards applicable to particular land use and zoning designations. The project is located in a non-urbanized area and would comply with 2040 General Plan policies ER-9.2 and ER-9.3, as described above, to ensure that the project does not degrade public views. Additionally, as mentioned above, the project would comply with 2040 General Plan Policies LU-1.7 and LU-1.8 requiring compatible design for new residential development including compatibility with scale, mass, and height of the surrounding residencies. The proposed residencies would thus not exceed a maximum height of approximately 35 feet and would be no more than two stories tall, which is consistent with the surrounding single family development. Thus, the proposed single-family residences would not be of a height that would substantially obstruct views of the surrounding mountain ranges. The project would convert the project site from open land to residencies and thus would change the character of the site. However, the project would have a compatible design to the surrounding residencies located west and north of the site. Additionally, the 2040 General Plan has anticipated the development of open land east of Jensen Lane, where the project is located, as well as the conversion of these areas to urban land uses. The project site does not contain any unique features and is not subject to any peculiar circumstances that would result in new impacts related to the existing visual character or scenic quality relative to what has been analyzed in the 2040 General Plan EIR. Compliance with established standards and applicable 2040 General Plan policies would ensure that new development complements and enhances the Town's existing visual character, while protecting public views. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

d. Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Due to the undeveloped nature of the project site, existing sources of light and glare do not currently exist on site. However, several existing sources of light currently exist in the project vicinity, including headlights from vehicles travelling on nearby roadways and exterior lighting associated with nearby residential uses. Development of the project site residential land uses would include sources of light associated with interior light spilling through windows, vehicle headlights entering and exiting the project site, exterior lighting, and light reflected off windows. These lighting sources would be similar to existing adjacent development.

The 2040 General Plan anticipated new sources of light and glare could be installed for new development on vacant lots, such as the project site. New light sources analyzed under the 2040 General Plan included streetlights, light fixtures in parking lots, exterior building illumination, interior lighting passing through building fenestration, reflective building and vehicles surfaces, and the headlights of motor vehicles. Thus, new sources of light and glare from the project would be consistent with the type of lighting anticipated for the project site per the Town's 2040 General Plan land use and zoning designations for the site. In addition, the project would comply with the Town's Zoning Ordinance requirements to minimize adverse effects from light spillover and glare to nearby properties as well as 2040 General Plan Policy LU-1.13 that requires projects to be designed to protect night skies. Development facilitated by the project would introduce new sources of light and glare in Windsor, resulting in increased ambient nighttime lighting. However, adherence to 2040 General Plan policies related to lighting and existing Zoning Ordinance requirements, specifically Section 27.20.030(D), would minimize adverse effects from light spillover to nearby properties and glare. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

2 Agriculture and Forestry Resources

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	■	☐
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☐	■
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)); timberland (as defined by Public Resources Code Section 12220(g)); timberland (as defined by Public Resources Code Section 4526); or timberland zoned Timberland Production (as defined by					

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Government Code Section 51104(g))?	☐	☐	☐	☐	■
d. Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☐	■
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	■	☐

Impacts to agricultural resources were analyzed on page 65 through 78 of the 2040 2040 General Plan EIR. Impacts related to conversion of farmland to non-agricultural land were determined to be significant and unavoidable, while impacts related to conflicts with lands currently under agricultural production and zoning were determined to be less than significant.

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

e. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

The 2040 General Plan EIR concluded that buildout of the Town's 2040 General Plan would result in significant and unavoidable impacts related to the conversion of Farmland. According to the California Department of Conservations (DOC) Important Farmland Map, the project site is designated on Farmland of Local Importance (DOC 2021). The 2040 General Plan states that "Development in accordance with the land use designations of the 2040 General Plan would reduce existing agriculture production in the 2040 General Plan Area, specifically in areas north of Arata Lane and north and south of Jensen Lane" (Town of Windsor 2018). Although there is currently no agricultural production on the project site because the site is designated as Farmland of Local Importance, the project would result in conversion of farmland. Therefore, similar to the findings in the 2040 General Plan EIR for the project site, because the site has a Farmland designation and

would be converted to non-agricultural use, impacts would be significant and unavoidable. Policies included in the 2040 General Plan would not create new agricultural lands to mitigate for agricultural land lost as a result of development under the 2040 General Plan. With implementation of 2040 General Plan policies to encourage the ongoing use of farmland, existing farmland on the project site would still be converted to non-agricultural uses, as analyzed as part of the 2040 General Plan EIR and impacts would remain significant and unavoidable. However, given that the project would be consistent with the site's 2040 General Plan land use designation, potential impacts to conversion of agriculture from buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR and would thus result in the same impacts as previously analyzed. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

There are no Williamson Act contract lands located in the Town and the project site is not located under a Williamson Act contract (County of Sonoma 2021). No impact to Williamson Act contract lands would occur.

The project site is zoned Estate Residential (ER) pursuant to the Town Zoning Code and adjacent to active agricultural land to the east. Chapter 27.24, Agricultural Preservation, of the Town of Windsor Zoning Ordinance requires an agricultural buffer of 200-feet at the time of subdivision or development for any parcel adjacent to agricultural lands. The project would include a 100-foot buffer to the south and east, which is less than the required buffer size. However, according to Section 27.24.020(B) of the Town of Windsor Zoning Ordinance, the Town Council may adjust the width of the buffer where deemed appropriate, provided the buffer would not be reduced to less than 100 feet. In addition, the lots on the southern portion of the site (lots 13 through 16) would not be developed until the property to the south is annexed into the Town and there is no longer agriculture.

The 2040 General Plan anticipated that new development would result in conversion of agricultural lands compared to the existing conditions and that future development would focus on underdeveloped areas, such as the project site. Additionally, the 2040 General Plan permits low density land uses to be adjacent to agricultural lands, including estate residential. Furthermore, policy ER-2.2 noted that the size of agricultural buffers would be determined by parcel specific review for new development adjacent to agricultural property.

Based on the above, there would be no new or substantially more severe impacts than what was analyzed in the 2018 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

c. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)); timberland (as defined by Public Resources Code Section 4526); or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

As discussed in the 2040 General Plan EIR there are no areas in the Town that meet the definition of a forestry resource, as defined by California Public Resources Code Section 12220(g). The project site does not have a forest land designation. Therefore, the project would not conflict with existing zoning or cause rezoning of forest land, timberland, or timberland zoned Timberland Production. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

d. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

As described under *item c*, the project site does not contain forest land or timberland. The project site is primarily vacant with an existing single-family residence located in the southern portion of the parcel. This site was previously cultivated with vineyards and is covered in non-native grass and various tree species. The 2040 General Plan concluded that there are no areas within the Town of Windsor that would meet the definition of a forestry resource (Town of Windsor 2018). Therefore, the project would have no impact to forest land. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

3 Air Quality

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	■	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☐	■	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	■	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☐	■	☐

Impacts to air quality were analyzed on pages 79 through 99 of the 2040 General Plan EIR. Impacts related to the temporary generation of air pollutants during construction were found to be significant but mitigable. Impacts related to violation of an air quality standard, net increase of a criteria pollutant, exposure of sensitive receptors to pollutant concentrations, conflict with implementation of an air quality plan, and creation of objectionable odors were found to be less than significant.

Overview of Air Pollution

The federal and State Clean Air Acts (CAA) mandate the control and reduction of certain air pollutants. Under these laws, the U.S. Environmental Protection Agency (U.S. EPA) and the

California Air Resources Board (CARB) have established the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for "criteria pollutants" and other pollutants. Some pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide, volatile organic compounds (VOC)/reactive organic gases (ROG),[2] nitrogen oxides (NO_X), particulate matter with diameters of ten microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between ROG and NO_X. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog).

Air pollutant emissions are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories:

- Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat.
- Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and can also be divided into two major subcategories:

- On-road sources that may be legally operated on roadways and highways.
- Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

Air Quality Standards and Attainment

The project site is located is located in the San Francisco Bay Area Air Basin (SFBAAB), which is under the jurisdiction of the Bay Area Air Quality Management District's (BAAQMD). As the local air quality management agency, the BAAQMD is required to monitor air pollutant levels to ensure that the NAAQS and CAAQS are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the SFBAAB is classified as being in "attainment" or "nonattainment." BAAQMD is in non-attainment for the state and federal ozone standards, the state and federal $PM_{2.5}$ standards and the state PM_{10} standards and is required to prepare a plan for improvement (BAAQMD 2017a).

Air Quality Management

Because the SFBAAB currently exceeds the federal ozone and $PM_{2.5}$ standards and the state ozone, PM_{10}, and $PM_{2.5}$ standards, the BAAQMD is required to implement strategies to reduce pollutant levels to achieve attainment of the NAAQS and CAAQS. The 2017 Plan provides a regional strategy to protect public health and the climate. Consistent with the greenhouse gas (GHG) reduction targets adopted by the state, the 2017 Plan lays the groundwork for a long-term effort to reduce

[2] CARB defines VOC and ROG similarly as, "any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate," with the exception that VOC are compounds that participate in atmospheric photochemical reactions. For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions, and the term ROG is used in this IS.

Bay Area GHG emissions to 40 percent below 1990 levels by 2030 and 80 percent below 1990 levels by 2050. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors (ROG and NO_X) and reduce transport of ozone and its precursors to neighboring air basins. In addition, the 2017 Plan builds upon and enhances the BAAQMD's efforts to reduce emissions of fine particulate matter and toxic air contaminants (TAC) (BAAQMD 2017a).

Air Pollutant Emission Thresholds

The BAAQMD has adopted guidelines for quantifying and determining the significance of air quality emissions in its *California Environmental Quality Act Air Quality Guidelines* (BAAQMD 2017b). BAAQMD has developed screening criteria where projects would have less than significant impacts from criteria air pollutant emissions if they are below a certain development size (BAAQMD 2017). For single-family developments, the construction screening criteria is 114 dwelling units and operational screening criteria is 325 dwelling units. For a project to meet the screening criteria for construction, it cannot include any of the following activities during construction:

- Demolition;
- Simultaneous occurrence of more than two construction phases (e.g., paving and building construction would occur simultaneously);
- Simultaneous construction of more than one land use type (e.g., project would develop residential and commercial uses on the same site) (not applicable to high density infill development);
- Extensive site preparation (i.e., greater than default assumptions used by the Urban Land Use Emissions Model [URBEMIS] for grading, cut/fill, or earth movement); or
- Extensive material transport (e.g., greater than 10,000 cubic yards of soil import/export) requiring a considerable amount of haul truck activity.

The construction details of the project are not known at this time. However, the project site would require the demolition of existing structures on the site and would thus not meet the BAAQMD screening threshold criteria for construction. Table 1 presents the significance thresholds for construction-related criteria air pollutant and precursor emissions used for the purposes of this analysis. These represent the levels at which a project's individual emissions of criteria air pollutants or precursors would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. For the purposes of this analysis, the project would result in a significant impact if construction emissions would exceed any of the thresholds shown in Table 1.

Table 1 BAAQMD Air Quality Thresholds of Significance

Pollutant/Precursor	Construction: Average Daily Emissions (lbs/day)
ROG	54
NO_X	54
PM_{10}	82 (exhaust)
$PM_{2.5}$	54 (exhaust)

The BAAQMD does not have quantitative thresholds for fugitive dust emissions during construction. Instead, the BAAQMD recommends Best Management Practices (BMPs) be implemented to reduce fugitive dust emissions. In the absence of a qualified Community Risk Reduction Plan, BAAQMD has

established the following *Thresholds of Significance* for local community risks and hazards associated with TACs and $PM_{2.5}$ for assessing individual source impacts at a local level. Impacts would be significant if:

- The project would result in an increased cancer risk of > 10 in one million
- The project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 1.0 Hazard Index
- The project would result in an ambient $PM_{2.5}$ concentration increase of > 0.3 $\mu g/m^3$ annual average

A project would be considered to have a cumulatively considerable impact if the aggregate total of current and proposed TAC sources within a 1,000 feet radius of the project fence-line in addition to the project would exceed the *Cumulative Thresholds of Significance*. Impacts would be significant if:

- The project would result in an increased cancer risk of > 100 in one million
- The project would result in an increased non-cancer (i.e., Chronic or Acute) risk of > 10 Hazard Index
- The project would result in an ambient $PM_{2.5}$ concentration increase of > 0.8 $\mu g/m^3$ annual average

Excess cancer risks are defined as those occurring in excess of or above and beyond those risks that would normally be associated with a location or activity if toxic pollutants were not present. Non-carcinogenic health effects are expressed as a hazard index, which is the ratio of expected exposure levels to an acceptable reference exposure level.

BAAQMD defines sensitive receptors as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and the chronically ill. These facilities include residences, school playgrounds, child-care centers, retirement homes, and convalescent homes.

Methodology

The BAAQMD has developed screening criteria to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant air quality impacts. If all the screening criteria are met by a project, the lead agency or applicant does not need to perform a detailed air quality assessment of the project's air pollutant emissions, and air quality impacts would be considered less than significant. However, the project does not meet the screening criteria for construction emissions. Air pollutant emissions generated by project construction were estimated using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. CalEEMod uses project-specific information, including the project's land uses, square footages for different uses (e.g., residential and general office), and location, to model a project's construction and operational emissions. The analysis reflects the construction of the project as described in the project description.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

The California Clean Air Act requires that air districts create a Clean Air Plan that describes how the jurisdiction will meet air quality standards. The most recently adopted air quality plan is the BAAQMD 2017 Plan. The 2017 Plan updates the most recent Bay Area plan, the 2010 Clean Air Plan, pursuant to air quality planning requirements defined in the California Health and Safety Code. To

fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors—ROG and NO_X—and reduce transport of ozone and its precursors to neighboring air basins. The 2017 Plan builds upon and enhances the BAAQMD's efforts to reduce emissions of fine particulate matter and TACs. The 2017 Plan does not include control measures that apply directly to individual development projects. Instead, the control strategy includes control measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants.

The 2017 CAP focuses on two paramount goals:

- Protect air quality and health at the regional and local scale by attaining all national and state air quality standards and eliminating disparities among Bay Area communities in cancer health risk from TACs
- Protect the climate by reducing Bay Area GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050

Under BAAQMD's methodology, a determination of consistency with the 2017 Plan should demonstrate that a project:

- Supports the primary goals of the air quality plan
- Includes applicable control measures from the air quality plan
- Does not disrupt or hinder implementation of any air quality plan control measures

As described in the 2040 General Plan EIR goals and policies of the Land Use and Community Design Element, Environmental Resources Element, and the Transportation and Mobility Element are aimed at reducing the air quality impacts associated with population growth in the Town. Goals and policies promote alternative transportation and reduced energy use. The project would provide pedestrian facilities throughout the site along proposed roadways and would include solar panels to reduce energy use. As shown in Table 12 of the 2040 General Plan EIR, projects (including the proposed project) under the 2040 General Plan would be consistent with the 2017 Plan control measures. Additionally, the proposed project would be required to be consistent with BAAQMD rules and regulations, including dust and diesel particulate matter reduction measures and would not otherwise cause the disruption, delay or otherwise hinder the implementation of any air quality plan control measure. The project is consistent with the 2040 General Plan. Therefore, the project would be consistent with the 2017 Plan and would not conflict with or obstruct the implementation of an applicable air quality plan, consistent with findings in the 2040 General Plan EIR. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Construction Emissions

Project construction would generate temporary air pollutant emissions associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction equipment and construction

vehicles in addition to ROG emissions that would be released during the drying phase of architectural coating. Table 2 summarizes the estimated construction emissions of pollutants during project construction that were calculated using CalEEMod *(*Appendix A). As shown therein, construction-related emissions would not exceed BAAQMD thresholds. Therefore, project construction would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.

Table 2 Construction Period Emissions

Construction Year	ROG	NO_x	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Emissions (lbs/day)				
2022	3.7	38.9	1.6	1.5
2023	38.2	14.5	0.7	0.7
BAAQMD Thresholds	54	54	82	54
Threshold Exceeded?	**No**	**No**	**No**	**No**

lbs/day = pounds per day; ROG = reactive organic gases, NO_x = nitrogen oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Emissions reported are higher of Winter and Summer emissions.

Notes: All emissions modeling was completed using CalEEMod. CalEEMod results are show in Appendix A

The BAAQMD does not have quantitative thresholds for fugitive dust emissions during construction. Instead, the BAAQMD recommends BMPs be implemented to reduce fugitive dust emissions. Consistent with the 2040 General Plan EIR, the project would implement Mitigation Measure AQ-1 to reduce fugitive dust emissions as required by BAAQMD.

Operational Emissions

The 2040 General Plan EIR assesses air quality impacts on a programmatic level and recognizes that site-specific impacts would be assessed during project review. To determine if further review under CEQA is necessary, the project was compared to the BAAQMD air pollutant screening criteria. The project site would be subdivided into 30 single-family units, thus the project falls below the screening criteria of 325 units for operational criteria pollutants (BAAQMD 2017). Projects that do not exceed the BAAQMD screening criteria are considered to result in less than significant cumulative impacts to air quality from criteria air pollutants. As the project would not exceed BAAQMD operational screening criteria, it would have a less than significant effect on air quality. Therefore, the project would not result in any new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

Mitigation Measures

Consistent with the 2040 General Plan EIR, the following mitigation measure is required to reduce impacts to less than significant levels:

AQ-1 Construction Emissions Measures

The Town shall require that development projects incorporate the Bay Area Air Quality Management District (BAAQMD) Basic Construction Mitigation Measures to reduce construction emissions for reactive organic gases, nitrogen oxides, and particulate matter (PM_{10} and $PM_{2.5}$). The

Town shall require the following to be adhered to during project construction to reduce air quality impacts. During construction activities:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day, with priority given to the use of recycled water for this activity when feasible.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emission evaluator.
8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's phone number shall also be visible to ensure compliance with applicable regulations.
9. The Town shall also require that development projects incorporate feasible measures that reduce operational emissions for reactive organic gases, nitrogen oxides, and particulate matter (PM_{10} and $PM_{2.5}$).

Significance After Mitigation

With implementation of Mitigation Measure AQ-1 the project would not result in a cumulatively considerable net increase of any criteria pollutant, therefore, there would be not be any new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Carbon Monoxide Hotspots

The project would include subdivision of the parcel into 30 single-family residential lots. Based on the Institute of Transportation Engineers (ITE) daily trip generation rate of 9.44, 30 single family residences would generate 284 daily trips (Institute of Transportation Engineers 2017). Jensen Lane, Portland Way, Vinecrest Road, and Prince George Way are considered minor streets that has far below 10,000 vehicles per day. The addition of 284 daily trips to area roadways would not exceed

the screening thresholds listed above. Therefore, the impact of localized CO emissions would not be significant.

Toxic Air Contaminants

Construction

Construction-related activities would result in temporary project-generated emissions of diesel particulate matter (DPM) exhaust emissions from off-road, heavy-duty diesel equipment for site preparation, grading, building construction, and other construction activities. DPM was identified as a TAC by CARB in 1998 (CARB 2017). Although construction activity is short-lived, it may increase TAC concentrations in the short term at nearby sensitive receptors. DPM is the primary contaminant of concern for the project and would be the TAC emitted in the largest quantity, thus health risks were assessed as they relate to DPM exposure. The nearest sensitive receptors to the project site are single family residences located along the west boundary of the project site. Single family residences proposed by the project would be constructed individually as lots are purchased and homes are designed. Therefore, due to the short duration of construction for each residence, sensitive receptors would not be exposed to significant amounts of TACs from project construction. Additionally, Table 2 provides estimated construction emissions, which are below BAAQMD thresholds.

Operational Impacts

Sources of TACs include, but are not limited to, land uses such as freeways and high-volume roadways, truck distribution centers, ports, rail yards, refineries, chrome plating facilities, dry cleaners using perchloroethylene, and gasoline dispensing facilities. The project does not include construction of new gas stations, dry cleaners, highways, high volume roadways, or other sources that could be considered a new permitted or non-permitted source of TAC or $PM_{2.5}$ in proximity to receivers. In addition, the project would not introduce a new stationary source of emissions and would not result in particulate matter greater than BAAQMD thresholds (see response under criteria a and b). Additionally, proposed residents would not be located within 1,000 feet of an existing stationary source or high-volume roadway. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

During construction activities, heavy equipment and vehicles would emit odors associated with vehicle and engine exhaust and during idling. However, these odors would be intermittent and temporary and would cease upon completion, and odors disperse with distance. Overall, project construction would not generate other emissions, such as those leading to odors, affecting a substantial number of people.

Table 3-3 in the BAAQMD 2017 *CEQA Air Quality Guidelines* provides screening distances for land uses that have the potential to generate substantial odor complaints. The uses in the table include wastewater treatment plants, landfills or transfer stations, refineries, composting facilities, confined animal facilities, food manufacturing, smelting plants, and chemical plants (BAAQMD 2017b). Single-

family residential development is not included in this list, and operation of the project would not generate other emissions, such as those leading to odors, that would affect a substantial number of people. No operational impacts would occur. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

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4 Biological Resources

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	■	☐	☐	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct					

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
removal, filling, hydrological interruption, or other means?	☐	■	☐	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	■	☐	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	■	☐	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	■	☐

Impacts to biological resources were analyzed on pages 101 through 118 of the 2040 General Plan EIR. Impacts related to direct and indirect impacts to special-status species, riparian habitats, or sensitive natural communities were found to be less than significant with Land Use Policy LU-1.13 to reduce impacts from lighting and Mitigation Measure BIO-1 to protect nesting birds. Impacts related to migratory fish or wildlife species were found to be less than significant with incorporation of mitigation to update Environmental Resources Element Policy ER-1.2. Impacts related to federally protected wetlands, conflicts with tree preservation policies, and conflicts with habitat preservation or natural community conservation plans were found to be less than significant.

a. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The project site contains several biological features, including wetlands, protected trees, and habitats that may support sensitive species. Therefore, implementation of the project may result in a significant impact to biological resources. The project would have a potentially significant impact on biological resources, therefore Items a through e will be analyzed further in the Supplemental EIR.

SUBSTANTIAL CHANGE IN CIRCUMSTANCES THAT MAY REQUIRE MAJOR EIR REVISIONS

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Windsor is located within the planning area for the Santa Rosa Plain Conservation Strategy, which is overseen by the United States Fish and Wildlife Service. The Conservation Strategy creates a long-term conservation program sufficient to mitigate potential adverse effects on listed species due to future development on the Santa Rosa Plain. The project site is located at the northeastern portion of the Santa Rosa Plain Conservation Strategy Study Area. However, the site is not a part of an existing or pending mitigation or preservation site. Additionally, the site does not interfere with any conservation and preservation areas within the study area (California Department of Fish and Game 2005). The project site is not located in any other adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

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5 Cultural Resources

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	■	☐	☐	☐
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐	☐
c. Disturb any human remains, including those interred outside of formal cemeteries?	☐	■	☐	☐	☐

Impacts to cultural resources were analyzed on pages 119 through 139 of the 2040 General Plan EIR and impacts to archaeological and historic resources were determined to be less than significant with mitigation to prepare cultural resources studies for projects with substantial ground disturbance (Mitigation Measure CR-1). Similarly, impacts to human remains were determined to be less than significant with mitigation providing guidance for handling unanticipated discovery of human remains (Mitigation Measure CR-4).

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Historical resources are features that are associated with the lives of historically important persons and/or historically-significant events, that embody the distinctive characteristics of a type, period, region or method of construction, or that have yielded, or may be likely to yield, information important to the pre-history or history of the local area, California, or the nation. Examples of typical historical resources include, but are not limited to, buildings, farmsteads, rail lines, bridges, and trash scatters containing objects such as colored glass and ceramics. The farmstead located on the project site consists of a circa 1900 craftsman bungalow building that may be considered a historical

and/or archaeological resource under CEQA. Additionally, obsidian flakes have been found on the project site. Therefore, the project would have a potentially significant impact on historic and archaeological resources, and this issue will be analyzed further in the Supplemental EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

c. Would the project disturb any human remains, including those interred outside of formal cemeteries?

The project site contains obsidian flakes and prehistoric archaeological sites often contain human remains. Project buildout would involve ground disturbance and would thus have the potential to disturb human remains. Impacts to human remains were found to be potentially significant, therefore, the project may have a potentially significant impact on human remains, and this issue will be analyzed further in the Supplemental EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

6 Energy

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	■	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	■	☐

California is one of the lowest per capita energy users in the United States, ranked 49th in the nation, due to its energy efficiency programs and mild climate (U.S. Energy Information Administration [EIA] 2014). Electricity and natural gas are primarily consumed by the built environment for lighting, appliances, heating and cooling systems, fireplaces, and other uses such as industrial processes in addition to being consumed by alternative fuel vehicles. Most of California's electricity is generated in state with approximately 28 percent imported from the Northwest and Southwest in 2019. However, the state relies on out-of-state natural gas imports for nearly 90 percent of its supply (California Energy Commission [CEC] 2021a and 2021b). In addition, approximately 32 percent of California's electricity supply comes from renewable energy sources, such as wind, solar photovoltaic, geothermal, and biomass (CEC 2021a). In 2018, Senate Bill 100 accelerated the state's Renewable Portfolio Standards Program, codified in the Public Utilities Act, by requiring electricity providers to increase procurement from eligible renewable energy and zero-carbon resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

Electricity and natural gas service in the Town of Windsor is provided by Pacific Gas & Electric (PG&E). PG&E provides natural gas and electric service to approximately 16 million people throughout a 70,000-square mile service area in northern and central California (PG&E 2017). In 2019, PG&E provided 33,087 million GWh of electricity to its residential users and 71,767 million GWh of electricity to all other user types (CEC 2019a). In 2019, PG&E provided 1,914

million therms of natural gas to its residential users and 3,058 million therms of natural gas to all other user types (CEC 2019b).

Development facilitated by the project would involve the use of energy during construction and operation. Energy use during construction would be primarily in the form of fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators for lighting. Temporary grid power may also be provided to construction trailers or electric construction equipment. Long-term operation of development projects would require permanent grid connections for electricity and natural gas service to power internal and exterior building lighting, and heating and cooling systems. In addition, the increase in vehicle trips associated with project operation would increase fuel consumption.

Table 3 shows the estimated electricity and natural gas demand compared to statewide demand for buildout under the 2040 General Plan, for which the project was included.

Table 3 2040 General Plan Energy Use Relative to Statewide Energy Use

Form of Energy	Units	Annual 2040 General Plan-Related Energy Use[1]	Annual Statewide Energy Use	Project Percent of Statewide Energy Use
Electricity	Megawatt hours	39,6761	295,405,0002[2]	0.0001%
Natural Gas	Billions of cubic feet	0.151	2,3133[3]	0.00006%

[1] 2040 General Plan

[2] California Energy Commission 2017a

[3] California Energy Commission 2017b

a. Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The project would involve the use of energy during construction and operation, including fuel consumption to operate heavy equipment, light-duty vehicles, machinery, and generators for lighting; temporary grid power; permanent grid connections for electricity and natural gas; and fuel consumption from increased vehicle trips associated with potential development. The 2040 General Plan EIR forecasted electricity, natural gas, and fuel consumption estimates for buildout of the Town under the 2040 General Plan. The project is consistent with the 2040 General Plan buildout, therefore, electricity, natural gas, and fuel consumption estimates from the 2040 General Plan EIR apply to the project.

The main forms of available energy supply are electricity, natural gas, and oil. Electricity and natural gas are currently provided to the project site by PG&E. In 2014, the Town of Windsor partnered with Sonoma Clean Power (SCP), a Community Choice Aggregation, which allows the purchase of electricity from renewable sources through PG&E infrastructure. Therefore, the project applicant would have convenient access to renewably sourced electricity to meet project energy demand.

Construction

All construction equipment and operation thereof would be regulated per the CARB In-Use Off-Road Diesel Vehicle Regulation, which imposes limits on idling, requires all vehicles to be reported to

CARB, restricts the addition of older vehicles into fleets, and requires fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. Compliance with the Regulation would improve fuel efficiency of construction vehicles.

CARB's 2017 Climate Change Scoping Plan Update (2017 Scoping Plan) builds upon previous efforts to reduce GHG emissions and is designed to continue to shift the California economy away from dependence on fossil fuels. Appendix B of the 2017 Scoping Plan includes examples of local actions to reduce energy consumption, such as enforcing idling time restrictions for construction vehicles, utilizing existing grid power for electric energy rather than operating temporary gasoline/diesel-powered generators, and increasing use of electric and renewable fuel-powered construction equipment.

Based on the above, the temporary increase in energy use during construction of the project would not result in a significant increase in peak or base demands or require additional capacity from local or regional energy supplies. The project would be required to comply with all applicable regulations related to energy conservation and fuel efficiency, which would help to reduce the temporary increase in demand. Furthermore, the project would be consistent with the site's existing 2040 2040 General Plan land use designation; thus, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

Operation

Energy use associated with operation of the project would be typical of residential uses, requiring electricity for interior and exterior building lighting, and operation of fixtures and appliances. Maintenance activities during operations, such as landscape maintenance, would involve the use of electric or gas-powered equipment. In addition to on-site energy use, the proposed project would result in transportation energy use associated with vehicle trips generated by future residents.

The project would be subject to all relevant provisions of the most recent update of the California Building Standards Code (CBSC), including the Building Energy Efficiency Standards, which would ensure that proposed structures would consume energy efficiently. Additionally, the project would require the installation of solar panels in adherence to the 2019 Building Energy Efficiency Standards Title 24. Furthermore, residents would have access to electricity generated from renewable sources through SCP. Even if residents choose to opt out of SCP, electricity supplied by PG&E is required to comply with the State's Renewable Portfolio Standard (RPS), which requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 60 percent by 2030. Thus, even if residents opt out of SCP and use PG&E electricity exclusively, a portion of the energy consumed during project operations would originate from renewable sources.

Based on the above, compliance with the State's latest Energy Efficiency Standards, including the addition of solar panels, would ensure that the project would implement all necessary energy efficiency regulations. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

Conclusion

Increasingly efficient building fixtures and vehicle engines, as well as implementation of policies included in the 2040 General Plan are expected to offset the energy demand facilitated by buildout of the 2040 General Plan, included in the proposed project. In addition, development facilitated by the 2040 General Plan would be subject to energy conservation requirements in the 2019 California

Green Building Standards Code and the 2019 Building Energy Efficiency Standards. Adherence to the efficiency requirements in the CBSC would ensure that buildout of the 2040 General Plan would not result in wasteful and inefficient use of nonrenewable resources due to building operation.

Given that the project would be consistent with the site's 2040 General Plan land use designation, buildout of the project site and associated energy demands have been anticipated by the Town and analyzed in the 2040 General Plan EIR. In addition, the project would comply with applicable 2040 General Plan policies, as well as other State energy standards, which would ensure that construction and operation of the project would not result in wasteful, inefficient, or unnecessary consumption of energy resources or conflict with or obstruct a State or local plan for renewable energy or energy efficiency. Based on the information above, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

7 Geology and Soils

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:					
1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?	☐	☐	☐	■	☐
2. Strong seismic ground shaking?	☐	☐	☐	■	☐
3. Seismic-related ground failure, including liquefaction?	☐	☐	☐	■	☐
4. Landslides?	☐	☐	☐	■	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	■	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of					

		Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
	the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	■	☐
d.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	■	☐
e.	Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☐	■
f.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	■	☐	☐

The 2040 General Plan EIR discusses geology and soils impacts on pages 141 through 155 and concludes that in the event of a major earthquake in the region, surface fault rupture and seismic ground shaking impacts would potentially injure people and could result in collapse or structural damage to existing and proposed structures. Fault-rupture and ground shaking could potentially expose people and property to seismic-related hazards, including localized liquefaction and related ground failure. However, impacts were determined to be less than significant, with incorporation of 2040 General Plan policies.

Impacts to paleontological resources were analyzed on pages 119 through 139 of the 2040 General Plan EIR. Paleontological resource impacts were determined to be less than significant with mitigation.

A soils investigation report was prepared for the project by Reese & Associates Consulting Geotechnical Engineers in November 2018 (Appendix B). The report summarized the current soil conditions on the project site, explored subsurface conditions, measured depth of groundwater, and recommended specific project-design features that would need to be incorporated to reduce risk from geological hazards. The contents of this investigation inform the following discussions.

a.1. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault?

a.2. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

a.3. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

The closest faults to the project site are the Rogers Creek Fault located 1.5 miles to the southeast, the Maacama fault located five miles to the northeast, and the San Andreas Fault located 20 miles to the southwest (Appendix B). The project site does not indicate the presence of active faults and is not located within current designated Alquist-Priolo Earthquake fault zone (DOC 2021b). However, there is a possibility for future faulting due to the nature of the Northern California region, although unlikely because historically faulting follows the trace of recently active faults. All development within the Town is required to comply with the CBSC, which provides minimum standards to ensure that proposed structures are designed using sound engineering practices and appropriate engineering standards for the seismic area in which a project site is located. Projects designed in accordance with the CBSC would be able to: 1) resist minor earthquakes without damage; 2) resist moderate earthquakes without structural damage, but with some non-structural damage; and 3) resist major earthquakes without collapse, but with some structural, as well as non-structural, damage. Although conformance with the CBSC does not guarantee that substantial structural damage would not occur in the event of a maximum magnitude earthquake, conformance with the CBSC can reasonably be assumed to ensure that the proposed structures would be survivable, allowing occupants to safely evacuate in the event of a major earthquake. Additionally, as discussed in the 2040 General Plan EIR, the project would adhere to Policies ER-1.3, PHS-2.2, PHS-2.3, PHS-2.4, and PHS-2.7 which would require future development on the lots to complete a detailed review of design and construction plans and incorporate structural safety features as necessary for residences that would be located on steep slopes or in areas subject to seismic hazards such as extreme ground shaking or liquefaction. Given that the project would be consistent with the site's 2040 General Plan land use designation, potential seismic risks associated with buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR.

The Town of Windsor does not include any identified liquefaction hazard zones, with the exception of areas near stream channels or creeks. The project site is not characterized within a liquefaction zone. Pursuant to the 2040 General Plan EIR, Windsor is characterized by generally flat topography and is not subject to substantial risk from landslides. In addition, the project site does not contain any steep or unstable slopes. Compliance with the CBSC as well as applicable 2040 General Plan policies, including Policies ER-1.3, PHS-2.2, PHS-2.3, PHS-2.4, and PHS-2.7, would reduce seismic and

seismic related hazards associated with new development. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

a.4. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

There are no mapped Earthquake Zones of Required Investigation, which are areas of identified seismic hazard, associated with landslides within or near Windsor (CGS 2021). However, Windsor is generally flat and is not subject to substantial risk from landslides. The greatest potential for a landslide within the Town is in the northeast where the topography becomes steeper along the edge of the foothills to the east (United States Geological Survey 1997). Similarly, the project site is not located near steep hills and not subject to risk from landslides. Thus, there is a less than significant impact to the risk of loss, injury, or death involving landslides. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project result in substantial soil erosion or the loss of topsoil?

According to the soil investigation conducted on the project site, topsoil consists of majority sandy silt and extends from two to four feet below the surface (Appendix B). According to the 2040 General Plan EIR, soils with smaller grain size and lower cohesion, such as sandy silt, have moderate erosion potential. Development of the proposed project would involve construction activities such as stockpiling, grading, excavation, paving, and other earth-disturbing activities that could result in erosion or the loss of topsoil.

Construction activities that disturb one or more acres of land surface are subject to the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) adopted by the State Water Resources Control Board (SWRCB). Compliance with the permit requires each qualifying development project to file a Notice of Intent with the SWRCB. Permit conditions require development of a storm water pollution prevention plan (SWPPP), which must describe the site, the facility, erosion and sediment controls, runoff water quality monitoring, means of waste disposal, implementation of approved local plans, control of construction sediment and erosion control measures, maintenance responsibilities, and non-storm water management controls. Inspection of construction sites before and after storms is also required to identify storm water discharge from the construction activity and to identify and implement erosion controls, where necessary. Compliance with the Construction General Permit is reinforced through the Code of the Town of Windsor, which requires the development of an erosion and sediment control plan that is equivalent to the required SWPPP. As part of this plan Construction Best Management Practices (BMP) would be implemented for soil stability and erosion control. Soil stabilization techniques may include preservation of existing vegetation, silt fencing, fiber rolls, sandbag barriers, gravel bag berms and stabilized construction site driveways. In addition, the project would comply with 2040 General Plan Policies PFS-4.3 and PFS-4.5, that would ensure proper soil management and minimize potential for erosion. Adherence to BMPs, the NPDES, and applicable 2040 General Plan policies

would ensure the project is designed to support erosion control. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

c. Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

The Town of Windsor does not include any identified liquefaction hazard zones, with the exception of areas near stream channels or creeks. The project site is not characterized within a high liquefaction zone (Town of Windsor 2018). The soil investigation prepared for the project site reported that no groundwater was detected during the investigation, thus, the probability of subsidence is low. However, it should be noted that groundwater conditions and seepage levels may vary seasonally. The project site is not located near any open faces that would be considered susceptible to lateral spreading. Therefore, the potential for liquefaction and lateral spreading to pose a risk to the proposed development is relatively low. The 2040 General Plan EIR concluded that with compliance with applicable 2040 General Plan policies, including Policies ER-1.3, PHS-2.2, PHS-2.3, and PHS-2.4, as well as the CBSC, lateral spreading and subsidence/settlement hazards would be less than significant. Given that the project would be consistent with the site's 2040 General Plan land use designation, potential liquefaction and lateral spreading risks associated with buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR. Therefore, impacts related to being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially resulting in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse were adequately addressed in the 2040 General Plan EIR. The project is not located in an area with a high possibility of subsidence, nor is it located in area that would be susceptible to lateral spreading or liquefaction. Thus, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

d. Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

The soil investigation reported that the project site contains a discontinuous sandy clay layer that is one to two feet thick (Appendix B). Sandy clay has a moderate to high expansion potential. Soil becomes significantly less expansive at about three to five feet, with the exception of the southwestern part of the project site. In the southwestern part of the project, soil was expansive up to six feet. Therefore, residential units constructed on the project site would be at risk from shrinking and swelling of the expansive clays.

The 2040 General Plan concluded that with compliance with applicable 2040 General Plan policies, including Policies PHS-2.4 and PHS-2.7, impacts related to expansive soils would be reduced to a less than significant level. Additionally, the proposed project would comply with the CBC requirements to address soil-related hazards. In cases where soil remediation is not feasible, the CBC requires structural reinforcement of foundations to resist the forces of expansive soils. Compliance with the

requirements of the California Building Code would reduce impacts related to expansive soils (Town of Windsor 2018). Furthermore, in accordance with 2040 General Plan Policy PHS-2.7 the project would be required to implement all recommendations from the soil investigation conducted on the site. Specifically, a post-tensioned slab-on-grade with properly compacted fill at locations of proposed residences and retaining walls to support backfill. Compliance with the 2040 General Plan policies, CBC, and implementation of project specific soil investigation recommendations would reduce impacts related to soil expansion. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The project site contains a septic tank that serves the existing single family residence, which would be removed as part of the project. The project site is located in an area with existing single-family residences and would connect to existing Town sewer services. Septic would not be allowed for proposed residences. Thus, the construction or operation of septic tanks or other alternative wastewater disposal systems is not included as part of the project. Therefore, no impacts from septic systems or alternative wastewater disposal systems would occur. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The 2040 General Plan determined that ground-disturbing activities in geologic units with high paleontological sensitivity have the potential to damage or destroy paleontological resources that may be present. Per Figure 10, Paleontological Sensitivity of Geologic Units within the 2040 General Plan Area, of the 2040 General Plan EIR, the project site is located in an area identified as having Low to High Paleontological Sensitivity. As such, the project may have a significant impact to paleontological resources and will be further discussed in the EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

8 Greenhouse Gas Emissions

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☐	■	☐
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	■	☐

Impacts to greenhouse gas (GHG) emissions were analyzed on pages 157 through 172 of the General Plan EIR. The project would not change the projected growth and emissions included in the Town's GHG reduction plan. Additionally, the project would be consistent with the 2040 General Plan policies intended to reduce GHG emissions. Furthermore, the project would be consistent with applicable plans, policies, or regulations stated in the 2040 General Plan EIR. Impacts related direct or indirect GHG emissions and conflicts with applicable plans, policies, or regulations were found to be less than significant.

Overview of Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of greenhouse gas (GHG) emissions contributing to the "greenhouse effect," a natural occurrence which takes place in Earth's atmosphere and helps regulate the temperature of the planet. The majority of radiation from the sun hits Earth's surface and warms it. The surface, in turn, radiates heat back towards the atmosphere in the form of infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions.

GHG emissions occur both naturally and as a result of human activities, such as fossil fuel burning, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Different types of GHGs have

varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 28, meaning its global warming effect is 28 times greater than CO_2 on a molecule per molecule basis (Intergovernmental Panel on Climate Change 2014).[3]

Anthropogenic activities since the beginning of the industrial revolution (approximately 250 years ago) are adding to the natural greenhouse effect by increasing the concentration of GHGs in the atmosphere that trap heat. Since the late 1700s, estimated concentrations of CO_2, methane, and nitrous oxide in the atmosphere have increased by over 43 percent, 156 percent, and 17 percent, respectively, primarily due to human activity (United States Environmental Protection Agency 2020). Emissions resulting from human activities are thereby contributing to an average increase in Earth's temperature. Potential climate change impacts in California may include loss of snow pack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (State of California 2018).

Regulatory Framework

In response to climate change, California implemented Assembly Bill (AB) 32, the "California Global Warming Solutions Act of 2006." AB 32 required the reduction of statewide GHG emissions to 1990 emissions levels (essentially a 15 percent reduction below 2005 emission levels) by 2020 and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions. On September 8, 2016, the Governor signed Senate Bill 32 into law, extending AB 32 by requiring the State to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, the California Air Resources Board (CARB) adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program and the Low Carbon Fuel Standard, and implementation of recently adopted policies and legislation, such as SB 1383 (aimed at reducing short-lived climate pollutants including methane, hydrofluorocarbon gases, and anthropogenic black carbon) and SB 100 (discussed further below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends local governments adopt policies and locally-appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) of CO_2e by 2030 and two MT of CO_2e by 2050 (CARB 2017).

Other relevant state laws and regulations include:

- **SB 375**: The Sustainable Communities and Climate Protection Act of 2008 (SB 375), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing the CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. Metropolitan Planning Organizations are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the Metropolitan Planning Organization's Regional

[3] The Intergovernmental Panel on Climate Change's (2014) *Fifth Assessment Report* determined that methane has a GWP of 28. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the Intergovernmental Panel on Climate Change's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

Transportation Plan (RTP). On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Metropolitan Transportation Commission (MTC)/Association of Bay Area Governments (ABAG) was assigned targets of a 10 percent reduction in per capita GHG emissions from passenger vehicles from 2005 levels by 2020 and a 19 percent reduction in per capita GHG emissions from passenger vehicles from 2005 levels by 2035. MTC/ABAG adopted Plan Bay Area 2040 in July 2017, which meets the requirements of SB 375. An update to the RTP/SCS is currently underway (Plan Bay Area 2050) with the draft EIR expected to be released during Summer 2021.

- **SB 100**: Adopted on September 10, 2018, SB 100 supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.
- **California Building Standards Code (California Code of Regulations Title 24)**: The California Building Standards Code consists of a compilation of several distinct standards and codes related to building construction including plumbing, electrical, interior acoustics, energy efficiency, and handicap accessibility for persons with physical and sensory disabilities. The current iteration is the 2019 Title 24 standards. Part 6 is the Building Energy Efficiency Standards, which establishes energy-efficiency standards for residential and non-residential buildings in order to reduce California's energy demand. Part 12 is the California Green Building Standards Code (CALGreen), which includes mandatory minimum environmental performance standards for all ground-up new construction of residential and non-residential structures.

a. Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction and operational activities have the potential to generate GHG emissions. The project would generate GHG emissions during temporary (short-term) construction activities such as site preparation, construction equipment engines, on-site heavy-duty construction vehicles, vehicles hauling materials to and from the project site, asphalt paving, and motor vehicles used by the construction workers. Long-term, operational GHG emissions would result from project-generated vehicular traffic, operation of any landscaping equipment, off-site generation of electrical power over the life of the project, the energy required to convey water to and wastewater from the project site, the emissions associated with the hauling and disposal of solid waste from the project site, and any fugitive refrigerants from air conditioning or refrigerators.

The Town of Windsor 2040 2040 General Plan EIR established GHG thresholds for any new development projects that were not already assessed under the Town's 2040 General Plan buildout analysis and EIR. Because the project does not change any 2040 General Plan land use designations, and because the project would implement 2040 General Plan policies to reduce GHG emissions, the project would not result in an increase to the estimated growth and emissions levels that were already analyzed as part of the 2040 General Plan EIR. In accordance with *CEQA Guidelines* Section 15183.5, if the project is consistent with the GHG Reduction Plan contained in the 2040 General Plan, GHG impacts are considered to be less than significant.

The project would be consistent with 2040 General Plan policies to reduce GHG emissions, including Policies LU-1.6 and ER-5.7 that state:

LU-1.6 Design for Livable Environments. The Town shall maintain design standards and create form-based codes or form-based design standards for specific areas that promote walkable and livable environments.

ER-5.7 **Reduced Emissions for Town Operations.** The Town shall promote reduced idling, trip reduction, routing for efficiency, carpooling, walking/biking and electric vehicle use for its transportation needs for Town operations.

The project would not change any 2040 General Plan land use designations, nor the estimated growth and emissions included in the Town's certified GHG Reduction Plan which is contained within the 2040 General Plan. Additionally, the project is below BAAQMD's screening thresholds for operational GHG emissions of 56 single family units, as 30 units are proposed. Because the project is consistent with the land use designation of the 2040 General Plan, as well as 2040 General Plan policies that target the reduction of GHGs, the project's impacts to GHG was included in the buildout analysis of the 2040 General Plan EIR, which concluded that GHG impacts were less than significant. Therefore, impacts to GHG emissions would the same, less than significant, for this project. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

This impact is addressed by assessing the project's consistency with the Town of Windsor 2040 General Plan (Town of Windsor 2018), the Town of Windsor Greenhouse Gas Emissions Reduction Action Plan Update, and CARB's adopted 2017 Scoping Plan Update (CARB 2017).

The project would include sidewalks and pedestrian infrastructure constructed along proposed roadways on the project site. There are also existing bike lanes along Vinecrest Road, and two transit stops approximately one mile northwest and southwest of the project site. In addition, the project would be required to comply with the most recent building standards included in Title 24, such as water saving devices, that would reduce GHG emissions. The project would not conflict with any policies contained in the 2040 General Plan to reduce GHG emissions, including Policies LU-1.6 and ER-5.7 that state:

LU-1.6 **Design for Livable Environments.** The Town shall maintain design standards and create form-based codes or form-based design standards for specific areas that promote walkable and livable environments.

ER-5.7 **Reduced Emissions for Town Operations.** The Town shall promote reduced idling, trip reduction, routing for efficiency, carpooling, walking/biking and electric vehicle use for its transportation needs for Town operations.

As described under *item (a)*, the project is consistent with the land use designation of the 2040 General Plan, which contains GHG reduction targets that align with AB 32 and SB 32, as well as CARB's 2017 Scoping Plan, and calls for communities in California to reduce emission levels to 1990 levels by 2020 and 40 percent below 1990 levels by 2030.

The project would comply with the California Green Building Standards Code, including requirements to increase recycling, reduce waste, reduce water use, solar panels, increase bicycle use, and other measures that will reduce GHG emissions. Motor vehicle emissions associated with the project would be reduced through compliance with mandatory State regulations on fuel efficiency and fuel carbon content. Emissions related to project electricity consumption would be

reduced as the electric utility, Sonoma Clean Power, is required to comply with the Renewable Portfolio Standard, which requires utilities to procure an incrementally increasing portion of electricity from renewable energy sources with the goal of achieving totally carbon-free energy by the year 2045.

Therefore, the project would not conflict with any applicable plan, policy, or regulation adopted to reduce GHG emissions. Impacts to GHG emissions would the same, less than significant, for this project. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

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9 Hazards and Hazardous Materials

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	■	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	■	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	☐	☐	☐	☐	■
d. Be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☐	■

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
e. For a project located in an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☐	■
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐	☐
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	■	☐	☐

The 2040 General Plan EIR discusses hazardous materials impacts on pages 173 through 194 and finds that impacts related to hazardous materials use in the Town and impacts regarding potential for exposure of people or the environment to hazardous materials or hazardous waste associated with future development would be less than significant.

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

As noted in the 2040 General Plan EIR, the overall quantity of hazardous materials and waste generated in the Town could incrementally increase as a result of 2040 General Plan buildout. However, compliance with existing applicable regulations and 2040 General Plan policies, including Policies PHS-5.1, PHS-5.4, and PHS-5.9, would ensure that risks from routine use, transport, handling, storage, disposal, and release of hazardous materials would be minimized. The 2040 General Plan EIR concluded that, given compliance with applicable 2040 General Plan policies, as well as State and federal regulations related to hazardous waste, impacts would be less than significant.

Construction activities associated with the project would involve the use of heavy equipment, which would contain fuels and oils, and various other products such as concrete. Small quantities of potentially toxic substances (e.g., petroleum and other chemicals used to operate and maintain construction equipment) would be used at the project site and transported to and from the site during construction. However, the project contractor would be required to comply with all California Health and Safety Codes and 2040 General Plan policies regulating the handling, storage, and transportation of hazardous and toxic materials. Thus, construction of the project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment.

Residential uses are not typically associated with the routine transport, use, disposal, or generation of substantial amounts of hazardous materials. Maintenance and operation of the project may use common household cleaning products, fertilizers, and herbicides on-site, any of which could contain potentially hazardous chemicals; however, such products would be expected to be used in accordance with label instructions. Due to the regulations governing use of such products and the amount anticipated to be used on the site, routine use of such products would not represent a substantial risk to public health or the environment.

Given that the project would be consistent with the site's 2040 General Plan land use designation, limited hazardous material use associated with buildout of the project site has been anticipated by the Town and analyzed in the 2040 General Plan EIR. In addition, the project would be subject to compliance with the 2040 General Plan policies listed above. Therefore, impacts related to creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials would be considered less than significant. No new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?

The closest school to the project site is Mattie Washburn Elementary School, located at 75 Pleasant Avenue, approximately 1.7 miles south of the site. There are no existing or proposed schools located within 0.25 miles from the project site. Additionally, the 2040 General Plan EIR concluded that impacts related to release of hazardous materials within 0.25 mile of existing or proposed schools would be less than significant because all businesses that handle or have on-site storage of hazardous materials would be required to comply with the provisions of the California Fire Code adopted by the Town (Town of Windsor Municipal Code Section 1-6-1-202) and any additional elements as required in the California Health and Safety Code Article 1 Chapter 6.95 for Business Emergency Plan. Furthermore, residential land uses are not considered to be hazardous waste generators and would not pose a threat to nearby schools. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

d. Would the project be located on a site that is included on a list of hazardous material sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The following databases compiled were checked, pursuant to Government Code Section 65962.5, on July 14, 2021 for known hazardous materials contamination in the project area.

- **California Department of Toxic Substances Control (DTSC)**
  - EnviroStor Hazardous Waste and Substances Site List per Government Code Section 65962.5(a) (DTSC 2021)
- **State Water Resources Control Board (SWRCB)**
  - GeoTracker List of Leaking Underground Storage Tank (LUST) Sites per Government Code Section 65962.5(c)(1) (SWRCB 2021)
- **California Environmental Protection Agency**
  - List of solid waste disposal sites identified by Water Board per Government Code Section 65962.5(c)(2) (CalEPA 2021a)
  - List of “active” Cease and Desist Orders and Clean-up and Abatement Orders per Government Code Section 65962.5(c)(3) (CalEPA 2021b)

The nearest hazardous waste and substances site to the project site is approximately 3.6 miles southeast (DTSC 2021). The closest LUST site is located on Hembree Lane, approximately half a mile southwest from the site (SWRCB 2021). The project site did not appear on the list of active CDO and CAOs (CalEPA 2021b), or on the list of solid waste disposal sites (CalEPA 2021a). The project site is not included on a list compiled pursuant to Section 65962.5 of the Government Code; thus, no impact would occur. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

The nearest airport is the Charles M. Schulz Sonoma County Airport, located 5.4 miles southeast of the project site. Pursuant to Exhibit C4, Safety Zones, of the Sonoma County Airport Comprehensive Airport Land Use Plan, the project site is located outside of all identified Safety Zones and the Primary Referral Area Boundary (Sonoma County Airport Land Use Commission 2016). The project site is not located within an airport land use plan area, or within two miles of a public or private airport and would not result in hazards associated with airport operations. There would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

NO IMPACT

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The project is not located along the primary evacuation routes located within Windsor, Highway 101 and Old Redwood Highway (Town of Windsor 2017a). However, the Town of Windsor is surrounded by wildland or agriculture, which makes the Town potentially vulnerable to wildland fire. In 2019, the Kincade Fire reached Windsor, which led to the evacuation of the entire Town and burned a portion of the project site. Additionally, a portion of the site was burned during the 2017 Tubbs fire, during which the Town experienced traffic during evacuation in the area surrounding the project site. Because the project site is susceptible wildfires and evacuation may be necessary in the project vicinity, a more thorough analysis of emergency evacuation and wildfire will be required. Impacts from wildfire and evacuation would be potentially significant and further analysis will be required and this item will be discussed in the EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

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10 Hydrology and Water Quality

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☐	■	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	■	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☐	■	☐
(i) Result in substantial erosion or siltation on- or off-site;	☐	☐	☐	■	☐

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
(ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site;	☐	☐	■	☐	☐
(iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	■	☐	☐
(iv) Impede or redirect flood flows?	☐	☐	☐	■	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☐	■
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	■	☐

The 2040 General Plan EIR discusses hydrology and water quality impacts on pages 195 through 219 and concludes that potential impacts to groundwater supplies, drainage patterns, flooding and inundation, would be less than significant with incorporation of 2040 General Plan goals and policies, and state and local regulations.

a. Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The project would involve grading over the 17-acre site, which would disturb more than 1.0 acre of land. Therefore, the project would be required to comply with the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2012-0006-DWQ) adopted by the SWRCB. The Town of Windsor Municipal Code also requires an erosion and sediment control plan for construction sites that is equivalent to the required SWPPP. Under the conditions of the General Construction Permit, the applicant would be required to develop and implement a SWPPP for construction activities. The SWPPP must include BMPs specific to project construction and is subject to inspections by a Qualified Stormwater Professional. BMPs aim to control degradation of surface water by preventing soil erosion or pollution discharge from the project area.

If groundwater dewatering[4] would be required during construction, the project would be required to comply with Waste Discharge Requirements for Low Threat Discharges to Surface Waters in the North Coast Region (Order No. R1-2009-0045; General NPDES Permit No. CA0024902), which requires the treatment of contaminated groundwater prior to discharge or disposal of contaminated groundwater at an appropriate disposal facility or wastewater treatment plant.

The project would also be required to adhere to the Town of Windsor Municipal Code requirements for new development, including BMPs, such as erosion control, revegetation detailed in the Town's Phase II NPDES Stormwater Management Plan. The Town of Windsor Municipal Code storm water discharge requirements are designed to achieve compliance with the NCRWQCB's NPDES permit and Waste Discharge Requirements for MS4 Discharges (Order No. R1-2015-0030; NPDES No. CA0025054). Finally, the project would adhere to 2040 General Plan policies including Policies PFS-4.1, PFS-4.4, ER-3.4, and ER-3.5 to minimize storm water runoff and Policies ER-3.4, ER-3.5, ER-6.6, and PHS-5.5 to prevent or remediate illicit discharges of pollutants to the municipal storm water conveyance system. These requirements would ensure that construction and operational stormwater runoff does not degrade surface or groundwater quality in the vicinity of the site. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

The 2040 General Plan EIR concluded that, while development facilitated by the 2040 General Plan could interfere with groundwater recharge and require dewatering during construction, implementation of 2040 General Plan policies, including Policies PFS-2.5, PFS-2.6, PFS-2.8, PFS-2.9,

[4] Dewatering is the removal of water from solid material or soil by wet classification, centrifugation, filtration, or similar solid-liquid separation processes, such as removal of residual liquid from a filter cake by a filter press as part of various industrial processes.

and Policy PHS-7.10, would ensure that future development would not deplete groundwater supplies substantially. Groundwater was not observed in past geological investigations of the project site; thus, the project would not directly interfere with the groundwater table (Appendix B). Additionally, the project would be served by the Windsor Water District, to which groundwater only accounts for less than one percent of the Towns water supply (Town of Windsor 2016). The project would add impervious surfaces to the mostly vacant site, such as new paved surfaces (roadways) and concrete surfaces (sidewalks), which would impact groundwater recharge. However, the project proposes the addition of rain gardens, permeable concrete gutters, and bioretention basins in order to capture runoff from the site and permit groundwater recharge. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

c.(i) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site?

c.(iv) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows?

There are no creeks, streams, or rivers adjacent to the project site. While the project would alter the existing drainage pattern of the site by increasing impervious surfaces, it would include on-site drainage channels. Individual lots would include rain gardens over storm drain outlet pipes that would divert water into storm drains on the project site. Bioretention basins would be constructed along interior roadways with a six-inch solid pipe to connect to a downstream bioretention basin. Drainage from the project site would be routed into two existing drainage connections, one at the western property line and another at Prince George Way. The project would also be required to comply with the NPDES General Construction Permit and prepare a SWPPP in order to reduce impacts to drainage patterns. Additionally, the project would comply with the Town of Windsor Municipal Code requiring an erosion and sediment control plan, and all applicable 2040 General Plan policies, including Policies PFS-4.5, ER-3.2, and PHS-2.2. Adherence to the NPDES General Construction Permit, Town of Windsor Municipal Code, the preparation of a SWPPP, 2040 General Plan policies, and the addition of on-site drainage channels would reduce impacts to less than significant. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

c.(ii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

c.(iii) Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner that would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

There are no creeks, streams, or rivers adjacent to the project site. The project would include development of a catch basin within the project tributary boundaries in order to intercept and mange surface water flow leaving the site. The Hydrology Analysis prepared by TDG Consulting Civil Engineers, Inc., dated July 7, 2020, concluded that catch basins would be designed to contain stormwater flows associated with a 10-year storm event and 100-year storm event (Appendix C*).* The project would be required through the design review process to demonstrate that the drainage route for a 100-year flood event would not impact adjacent structures. Therefore, this impact will be further analyzed in the EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

The project area is not located in a tsunami inundation area, nor is there a water body near the project area capable of seiche. Therefore, there would be no impact and no further analysis in the EIR is required.

NO IMPACT

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Santa Rosa Plain Groundwater Sustainability Agency (GSA) is a public agency formed to sustainably manage groundwater in the Santa Rosa Plain groundwater basin. The GSA is preparing a draft Groundwater Sustainability Plan, which has not yet been adopted.

Water quality in the Town is governed by the North Coast Regional Water Quality Control Board (NCRWQCB), which sets water quality standards in the Water Quality Control Plan for the North Coast Region (Basin Plan). As discussed in *item (a),* the project would be required to comply with NPDES requirements, and the Code of the Town of Windsor which requires an erosion and sediment control plan for construction sites that is equivalent to the required SWPPP. As discussed under criteria (*a*) and (*b*) above, the project would not use groundwater, violate water quality standards, or degrade water quality during construction or operation. Additionally, adherence to state and local policies would further maintain water quality. Given that the project would be consistent with the site's 2040 General Plan land use designation, conflicts with a water quality control plan associated with buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR. Therefore, the proposed project would not interfere with water quality control plans or sustainable groundwater management plans. Thus, there would be no new or

substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

11 Land Use and Planning

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Physically divide an established community?	☐	☐	☐	■	☐
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	■	☐

The 2040 General Plan EIR addresses land use and planning on pages 221 through 241. The 2040 General Plan EIR analysis finds that potential impacts from dividing existing communities and consistency with existing plans, policies, and regulations would be less than significant.

a. Would the project physically divide an established community?

The project would include an extension from Prince George Way to the east on the southern portion of the project site until the road extension would intersect with a new segment of Jensen Lane. Portland Way, a proposed roadway, would bisect the project site from north to south and connect to Vinecrest Road and Prince George Way. Sidewalks would be constructed along proposed roadways on the project site and roads would be accessible to the surrounding community. Additionally, project implementation would continue the existing residential development pattern in the neighborhood and is consistent with the Town's 2040 General Plan land use designation of the site. Therefore, the project would not divide the currently established community and there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The project is consistent with the Town's 2040 General Plan land use designation and land use policies, as discussed throughout this Initial Study. The project would not conflict with any federal or state policies or regulations. However, as discussed in Section 2, Agricultural Resources, agricultural land is located adjacent to the site to the east and south. The project would include a 100-foot buffer to the east and south, which is less than the required buffer size of 200-feet. However, according to Section 27.24.020(B) of the Town of Windsor Zoning Ordinance the Town Council may adjust the width of the buffer where deemed appropriate, provided the buffer would not be reduced to less than 100 feet. The 2040 General Plan permits low density land uses to be adjacent to agricultural lands, including estate residential. Furthermore, Policy ER-2.2 noted that the size of agricultural buffers would be determined by parcel specific review for new development adjacent to agricultural property. Given that the project would be consistent with the site's 2040 General Plan land use designation, potential risks with agriculture adjacent to residential development associated with buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR. Chapter 27.24, Agricultural Preservation, of the Town of Windsor Zoning Ordinance requires an agricultural buffer of 200-feet at the time of subdivision or development for any parcel adjacent to agricultural lands. However, according to Section 27.24.020(B) of the Town of Windsor Zoning Ordinance, the Town Council may adjust the width of the buffer where deemed appropriate, provided the buffer would not be reduced to less than 100 feet. A 100-foot agriculture buffer would be included along the eastern portion of the project site. In addition, the lots adjacent to the existing vineyards to the south would not be developed until agricultural uses cease on the parcel to the south and the southern parcels change to a non-agriculture land use designation. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

12 Mineral Resources

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☐	■
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☐	■

Impacts related to mineral resources were analyzed on page 345 of the 2040 General Plan EIR and the were determined to have no impact.

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

The project site is not zoned or designated for mining uses and no active mining operations are in the project area or vicinity. The project would not result in the loss of availability of a known mineral resource that would be of value to the residents of the state and the region, nor would it result in loss of a locally important mineral resource recovery site. The project does not involve developing currently undeveloped land with the potential to contain valuable mineral resources. Therefore, there would be no impact and no further analysis in the EIR is required.

NO IMPACT

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13 Noise

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project result in:					
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	■	☐
b. Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	■	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☐	■

The 2040 General Plan EIR analyzes noise on pages 243 through 262 and finds operational noise impacts to be less than significant and impacts from construction noise and vibration would be less than significant with implementation of mitigation.

Overview of Noise and Vibration

Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

HUMAN PERCEPTION OF SOUND

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response. Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease (Caltrans 2013).

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not "sound twice as loud" as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible (8 times the sound energy); and that an increase (or decrease) of 10 dBA sounds twice (half) as loud (10.5 times the sound energy) (Caltrans 2013).

SOUND PROPAGATION AND SHIELDING

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in the noise level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line), the path the sound will travel, site conditions, and obstructions.

Sound levels are described as either a "sound power level" or a "sound pressure level," which are two distinct characteristics of sound. Both share the same unit of measurement, the dB. However, sound power (expressed as L_{pw}) is the energy converted into sound by the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers, such as an eardrum or microphone, which is the sound pressure level. Sound measurement instruments only measure sound pressure, and noise level limits are typically expressed as sound pressure levels.

Noise levels from a point source (e.g., construction, industrial machinery, air conditioning units) typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance. Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of

the noise levels. Natural terrain features, such as hills and dense woods, and man-made features, such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receiver (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce exposure to noise as well. The FHWA's guidance indicates that modern building construction generally provides an exterior-to-interior noise level reduction of 10 dBA with open windows and an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows (FHWA 2011).

DESCRIPTORS

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. The noise descriptors used for this study are the equivalent noise level (L_{eq}), Day-Night Average Level (DNL; may also be symbolized as L_{dn}), and the community noise equivalent level (CNEL; may also be symbolized as L_{den}). The L_{90} is the sound level exceeded 90 percent of the time. The L_{max} is the maximum noise level reached during a single noise event.

L_{eq} is one of the most frequently used noise metrics; it considers both duration and sound power level. The L_{eq} is defined as the single steady-state A-weighted sound level equal to the average sound energy over a time period. When no time period is specified, a 1-hour period is assumed. The L_{max} is the highest noise level within the sampling period, and the L_{min} is the lowest noise level within the measuring period. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (L_{DN}), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.). Community noise can also be measured using Community Noise Equivalent Level (CNEL or L_{DEN}), which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013).[5] The relationship between the peak-hour L_{eq} value and the L_{DN}/CNEL depends on the distribution of noise during the day, evening, and night; however noise levels described by L_{DN} and CNEL usually differ by 1 dBA or less. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 CNEL, while areas near arterial streets are in the 50 to 60+ CNEL range (FTA 2018).

Groundborne Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent buildings or structures and vibration energy may propagate through the buildings or structures. Vibration may be felt, may manifest as an audible low-frequency rumbling noise (referred to as groundborne noise), and may cause windows, items on shelves, and pictures on walls to rattle. Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants at vibration-sensitive land uses and may cause structural damage.

[5] Because DNL and CNEL are typically used to assess human exposure to noise, the use of A-weighted sound pressure level (dBA) is implicit. Therefore, when expressing noise levels in terms of DNL or CNEL, the dBA unit is not included.

Typically, ground-borne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases. Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS) vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used as it corresponds to the stresses that are experienced by buildings (Caltrans 2020).

High levels of groundborne vibration may cause damage to nearby building or structures; at lower levels, groundborne vibration may cause minor cosmetic (i.e., non-structural damage) such as cracks. These vibration levels are nearly exclusively associated with high impact activities such as blasting, pile-driving, vibratory compaction, demolition, drilling, or excavation. The American Association of State Highway and Transportation Officials (AASHTO) has determined vibration levels with potential to damage nearby buildings and structures; these levels are identified in Table 4.

Table 4 AASHTO Maximum Vibration Levels for Preventing Damage

Type of Situation	Limiting Velocity (in/sec)
Historic sites or other critical locations	0.1
Residential buildings, plastered walls	0.2–0.3
Residential buildings in good repair with gypsum board walls	0.4–0.5
Engineered structures, without plaster	1.0–1.5

Source: Caltrans 2020

Numerous studies have been conducted to characterize the human response to vibration. The vibration annoyance potential criteria recommended for use by Caltrans, which are based on the general human response to different levels of groundborne vibration velocity levels, are described in Table 5.

Table 5 Vibration Annoyance Potential Criteria

	Vibration Level (in/sec PPV)	
Human Response	Transient Sources	Continuous/Frequent Intermittent Sources[1]
Severe	2.0	0.4
Strongly perceptible	0.9	0.10
Distinctly perceptible	0.25	0.04
Barely perceptible	0.04	0.01

in/sec = inches per second; PPV = peak particle velocity

[1] Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2020

Regulatory Setting

Federal Noise Policies

There are no federal noise requirements or regulations that apply directly to the implementation of the 2040 General Plan. However, there are federal regulations that influence the audible landscape, especially for projects where federal funding is involved. For example, the FHWA requires abatement of highway traffic noise for highway projects through rules in the Code of Federal Regulations (23 CFR Part 772), the FTA, and Federal Railroad Administration (FRA). Each agency recommends thorough noise and vibration assessments through comprehensive guidelines for any highway, mass transit, or high-speed railroad projects that would pass by residential areas.

In addition, the Federal Aviation Administration (FAA) has prepared guidelines for acceptable noise exposure in its Federal Aviation Regulations Part 150 Noise Compatibility Planning program for airports. The program is aimed at balancing an airport's operational needs and its impact on the surrounding community. Its purpose is to reduce noise impacts on existing incompatible land use and to prevent the introduction of new incompatible land uses in the areas impacted by aircraft noise. It establishes standard noise methodologies and noise metrics, identifies land uses normally compatible with various levels of airport noise, and provides for voluntary development and submission of noise exposure maps and noise compatibility programs by airport operators. See discussion below regarding the Sonoma County Comprehensive Airport Land Use Plan.

State Noise and Vibration Policies

Title 24 of the California Code of Regulations codifies Sound Transmission Control requirements establishing uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than single-family dwellings. Specifically, Section 1207.4 in Title 24 states that interior noise levels attributable to exterior noise sources shall not exceed 45 dBA CNEL in any habitable room of a new building.

While there are no State standards for vibration, Caltrans establishes vibration risk for structures. For continuous, frequent, and intermittent vibration, Caltrans considers the architectural damage risk level to be somewhere between 0.08 and 0.5 inches per second (in/sec) peak particle velocity (PPV) depending on the type of building that is affected.

LOCAL NOISE POLICIES

Sonoma County Comprehensive Airport Land Use Plan

The Sonoma County Airport Land Use Commission (ALUC) governs the Sonoma County Airport through the Comprehensive Airport Land Use Plan (CALUP), as adopted in January 2001 and amended in March 2016. Sonoma County Airport is located over 870 feet southwest of the WindsorTown Limits and Urban Growth Boundary. The CALUP is intended to protect and promote the safetyand welfare of residents near the public use airports in the county, as well as airport users, while promoting the continued operation of the six airports covered by the plan. Section 65302.3 of the Government Code requires general plan and applicable specific plans to be consistent with amended CALUPs.

Town of Windsor Zoning Ordinance

Chapter 27.20 of the Zoning Ordinance sets maximum allowable exterior and interior noise levels atreceiving land uses subject noise generated by activities on nearby properties. These allowable noise levels, shown in Table 6, vary by land use and time of day.

Table 6 Maximum Noise Levels by Receiving Land Use

Zone	Time Interval	Exterior Maximum Allowable Noise Level (dBA)	Interior Maximum Allowable Noise Level (dBA)
Single- or multi-family residential	7 a.m. to 10 p.m.	55	35
	10 p.m. to 7 a.m.	50	45
Commercial	7 a.m. to 10 p.m.	65	50
	10 p.m. to 7 a.m.	55	
Industrial or Manufacturing	Any time	70	55
Public Parks, public open space, and Civic Centers	7 a.m. to 10 p.m.	55	NA
	10 p.m. to 7 a.m.	50	

[1] Each of the noise limits specified above shall be reduced by 5 dBA for impulse or simple tone noises, or for noise consisting of speech or music. If the ambient noise level exceeds the resulting standard, the ambient noise level shall be the standard.

[2] It shall be unlawful for any person within a residentially zoned area of the town to operate any noise amplified device (e.g., bull horns, microphones, musical instruments, speakers, etc.), that exceeds a noise level of 45 dBA measured at the property line or cause loud excessive noise which disturbs the peace of the neighborhood.

Source: Town of Windsor, 2007; Town of Windsor Zoning Ordinance, Chapter 27.20, Table 3-1.

In addition, Section 7-1-1018 of the Code of the Town of Windsor restricts the timing of construction activities authorized by a Town permit to the hours of 7 a.m. to 7 p.m. Monday through Friday and 8 a.m. to 7 p.m. on Saturday. No construction shall be permitted on Sundays unless authorized by the Building Official and in no case shall construction be allowed on Sundays before 9:00 a.m. or after 5:00 p.m.

a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction Noise

Construction activity would generate temporary noise in the project site vicinity, exposing surrounding sensitive receivers to increased noise levels. Construction noise was estimated using the FHWA Roadway Construction Noise Model (RCNM) (FHWA 2006). RCNM predicts construction noise levels for a variety of construction operations based on empirical data and the application of acoustical propagation formulas. Using RCNM, construction noise levels were estimated at noise sensitive receivers near the project site. RCNM provides reference noise levels for standard construction equipment, with an attenuation of 6 dBA per doubling of distance for stationary equipment

Project construction noise would be generated by heavy-duty diesel construction equipment used for demolition, site preparation, grading, building construction, and paving activities. Each phase of construction has a specific equipment mix and associated noise characteristics, depending on the equipment used during that phase. Construction noise would typically be higher during the more equipment-intensive phases of initial construction (i.e., demolition, site preparation and grading

work) and would be lower during the later construction phases (i.e., building construction and paving). Typical heavy construction equipment during project grading could include dozers, loaders, and dump trucks. It is assumed that diesel engines would power all construction equipment. Construction equipment would not all operate at the same time or location. In addition, construction equipment would not be in constant use during each workday.

Noise impacts from construction equipment are typically assessed from the center of the equipment activity area (e.g., construction site, demolition area, grading area, etc.) over the time period of a construction day. The grading equipment would be transporting soil from leveling and grading off-site. The grading activities would generate the greatest noise levels of the identified activities with operation of a dozer and front-end loader for a noise level of approximately 80 dBA L_{eq} and 82 dBA L_{max} at 50 feet. This noise level was calculated assuming simultaneous use of a dozer and a front-end loader. RCNM calculations are included in Appendix D.

Per Section 7-1-190 of the Code of the Town of Windsor restricts the timing of construction activities authorized by a Town permit to the hours of 7 a.m. to 7 p.m. Monday through Friday, , 8 a.m. to 7 p.m. on Saturday, and prohibited on Sunday unless approved by the Town. However, the Town has not adopted any numerical thresholds related to construction noise. For purposes of analyzing impacts from this project, the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) criteria were used. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. For commercial and residential uses, the daytime noise threshold is 85 dBA L_{eq} and 80 dBA $L_{eq,}$ respectively, for an 8-hour period (FTA 2018). Therefore, construction noise would not exceed the daytime construction noise threshold for residential land uses of 80 dBA L_{eq}. Additionally, the project would comply with Mitigation Measure N-1, provide below, from the 2040 General Plan EIR, which all projects involving construction to implement techniques to reduce noise during construction.

On-site Operational Noise

The project would generate operational noise that would be typical of residential uses, including heating, ventilation, and air conditioning (HVAC) equipment, parking activities, and solid waste collection and recycling operations. Noise associated with solid waste collection and recycling operation is exempt from the Town's noise standards pursuant to Section 27.20.030(F)(6) of the City's Zoning Ordinance.

Noise associated with parking activities would include vehicle circulation, engines, car alarms, door slams, and human voices. The maximum sound of a passing car at 15 miles per hour (mph) typically ranges from 52 to 62 dBA L_{max} at 50 feet (City of Novato 2018). The noise generated during an engine start is similar. Door slams create lower noise levels. Nearby sensitive receivers, single family residences, would be as close as 150 feet to noise associated with parking activities. At 150 feet noise level would range from 43 to 53 dBA L_{max}. Noise from parking activity would be intermittent and would not result in an exceedance of the Town's noise standards. Therefore, noise levels from parking activities would not create a significant impact at nearby sensitive receivers.

The project would include the addition of new HVAC equipment, either on rooftops or at ground level. HVAC equipment is a continuous noise source, and noise levels can reach up to 70 dBA L_{eq} at a distance of 15 feet from the source (Illingworth & Rodkin 2009). HVAC equipment would be located as close as 75 feet from adjacent property lines when considering building setbacks. Noise levels generated by HVAC equipment would be approximately 56 dBA L_{eq} at 76 feet. This analysis conservatively did not account for shielding that may occur on HVAC units. Although HVAC noise levels may exceed the Town's daytime and nighttime noise standards for residential land uses the

project would be required to adhere to the Town's Noise Ordinance contained in Chapter 27.20 of the Zoning Ordinance. The building permit plans for development of the single family residences would be required to include the location of HVAC units, manufacturer's specifications, and demonstrate compliance with the Town's Noise Ordinance standards. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

Off-Site Operational Noise

The project would generate vehicle trips, thereby increasing traffic noise on area roadways. The project is estimated to generate approximately 284 new daily trips. There are 119 PM peak hour trips on Vinecrest Road, north of the project site (W-Trans 2021). Therefore, there are approximately 1,190 average daily trips on Vinecrest Road.[6] An increase in 284 daily trips would represent an approximately 24 percent increase in daily trips on Vinecrest Road. A doubling of traffic volume increases noise level by 3 dBA, the level of human perception for an increase in noise (Caltrans 2013). Therefore, the project would not result in a perceptible increase in traffic noise along Vinecrest Road. Noise associated with additional vehicles on area roadways, such as Vinecrest Road and Jensen Lane, would similarly add incremental increases in off-site noise from speeding and tire squeals. Automobiles traveling at 15 miles per hour emits noise of approximately 52 to 62 dBA at 50 feet and sounds from other driving activities, such as tire squeals can be as loud ad 60 dBA at 100 feet (City of Novato 2018; Gordon Bricken and Associates 1996). Noise from the approximately 284 new daily trips from vehicle speeding, stopping at intersections, and tire squeals would be intermittent and would not significantly contribute to overall ambient noise levels in the project vicinity. Therefore, the project would not result in a significant increase in traffic noise compared to what was previously analyzed in the 2040 General Plan EIR.

Mitigation Measure

Consistent with the 2040 General Plan EIR, the following mitigation measure is required:

N-1 Construction Noise Control Measures

The following noise control measures shall be included as standard conditions of approval for projects involving construction:

1. Properly muffle and maintain all construction equipment powered by internal combustion engines.
2. Prohibit unnecessary idling of combustion engines.
3. Locate all stationary noise-generating construction equipment such as air compressors as far as practical from existing
   nearby residences and other noise-sensitive land uses. Such equipment shall also be acoustically shielded.
4. Select quiet construction equipment, particularly air compressors, whenever possible. Fit motorized equipment with proper mufflers in good working order.
5. Residences adjacent to project sites shall be notified in advance by writing of the proposed construction schedule before construction activities commence.

[6] Average daily trip calculations are based on the industry standard that average daily trips are approximately 10 times peak hour trips.

6. The project applicant shall designate a "noise disturbance coordinator" responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint (e.g., starting too early, bad muffler, etc.) and shall require that reasonable measures be implemented to correct the problem. A telephone number for the disturbance coordinator shall be posted at the construction site.

Significance After Mitigation

Impacts from construction and operational noise would be less than significant with implementation of Mitigation Measure N-1. Based on the information above, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction

Project construction would not involve activities typically associated with excessive groundborne vibration such as pile driving or blasting. The equipment utilized during project construction that would generate the highest levels of vibration would include rollers, loaded trucks, and bulldozers. The Town of Windsor has not adopted standards to assess vibration impacts during construction and operation. However, Caltrans has developed limits for the assessment of vibrations from transportation and construction sources. The Caltrans vibration limits are reflective of standard practice for analyzing vibration impacts on structures from continuous and intermittent sources. The thresholds of significance used in this analysis to evaluate vibration impacts are based on these impact criteria, as summarized in Table 10.

Project construction may require operation of vibratory equipment such as vibratory rollers, loaded trucks, and bulldozers within 25 feet of the nearest neighboring residencies. As shown in Table 7, vibration levels from individual pieces of construction equipment would not exceed the threshold at which damage can occur to residential structures, 0.20 PPV, or the threshold at which transient vibration sources would be distinctly perceptible to 0.25 PPV. Construction vibration levels at all in the immediate vicinity, including residences to the west and north, would be less than the levels shown in Table 7 because vibration levels would attenuate with distance. Furthermore, in accordance with Section 7-1-190 of the Code of the Town of Windsor, project construction would be required to occur during daytime hours and would not disturb neighboring residents during sensitive hours of sleep. Finally the project would be required to adhere to Mitigation Measure N-2 Construction Vibration Control Measures, listed below, from the 2040 General Plan EIR.

Table 7 Vibration Levels at Sensitive Receivers

Equipment	PPV at 25 ft. (in/sec)
Large Bulldozer	0.089
Loaded Trucks	0.076
Small Bulldozer	0.003

Source: FTA 2018

Operation

As a residential development, the project would not generate significant stationary sources of vibration, such as manufacturing or heavy equipment operations. No operational vibration impact would occur.

Mitigation Measure

Consistent with the 2040 General Plan EIR, the following mitigation measure is required to reduce impacts to less than significant levels:

N-2 Construction Vibration Control Measures

The following measures to minimize exposure to construction vibration shall be included as standard conditions of approval for applicable projects involving construction:

1. Avoid the use of vibratory rollers within 50 feet of fragile buildings, which are buildings that are susceptible to damage from vibration.
2. Schedule construction activities with the highest potential to produce vibration to hours with the least potential to affect nearby institutional, educational, and office uses that the Federal Transit Administration identifies as sensitive to daytime vibration (FTA 2006).
3. Notify neighbors of scheduled construction activities that would generate vibration.

Significance After Mitigation

Impacts to groundborne vibration or groundborne noise levels would be less than significant with adherence to mitigation measure N-2 which is contained in the 2040 General Plan EIR. Based on the information above and with adherence to this mitigation measure, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The nearest airport is the Charles M. Schulz Sonoma County Airport, located 5.4 miles southeast of the project site. Pursuant to Exhibit C4, Safety Zones, of the Sonoma County Airport Comprehensive Airport Land Use Plan, the project site is located outside of all identified Safety Zones and the Primary Referral Area Boundary (Sonoma County Airport Land Use Commission 2016). The project site is not located within an airport land use plan area, or within two miles of a public or private airport. The project would not result in hazards associated with airport operations and therefore, there would be no impact and no further analysis in the EIR is required.

NO IMPACT

14 Population and Housing

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	■	☐
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☐	■

The 2040 General Plan EIR discusses population and housing impacts on pages 263 through 272. The 2040 General Plan EIR accounts for a population of 31,749 people in 2040 at full buildout of the 2040 General Plan. Impacts from unplanned population growth and displacement of existing housing were determined to be less than significant.

a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The 2040 General Plan EIR indicated an average annual growth rate in the Town of 1.5 percent, consistent with the Town's Growth Control Ordinance. The project would result in 30 single family units on a primarily vacant site with an existing single-family home. According to the Department of Finance (DOF) the average single-family residence in the Town of Windsor has three (3) persons per household. Therefore, the proposed project would introduce approximately 90 new residents (DOF 2021). The 2040 General Plan growth calculations account for the project as they provide for new housing units to be developed in accordance with the growth expected under the 2040 General Plan's land use plan. The 2040 General Plan anticipates population growth to increase to 38,028 by 2040, which exceeds the anticipated population of 32,805 in 2040 from Plan Bay Area (Association

of Bay Area Governments 2020). Windsor's current population is approximately 27,855 persons, and the project would introduce 90 new residents, approximately a 0.3 percent increase in population (California Department of Finance 2021). The population increase generated by the project, therefore, falls within the growth projected by both Plan Bay Area and the 2040 General Plan. Accordingly, the project would not induce substantial population growth directly or indirectly because the project is part of planned growth in the region. Additionally, given that the project would be consistent with the site's 2040 General Plan land use designation, potential impacts from population growth associated with buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The project site is mostly vacant with one single-family residence that would be demolished as part of the project. The project would provide 30 new single-family residences, increasing the number of residential units at the site by 29. Therefore, the project would not displace a substantial number of existing people or housing. Rather it would provide additional housing opportunities in Windsor and would be in accordance with the 2040 2040 General Plan policies, including LU-1.7 which states that "the Town shall encourage new residential development within existing neighborhoods to include building designs that provide diversity while maintaining compatibility with the scale, massing, and heights of the existing homes. Criteria for determining compatible development are defined in design standards for the Town or in form-based codes for specific areas." Therefore, there would be no impact and no further analysis in the EIR is required.

NO IMPACT

15 Public Services

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:					
1. Fire protection?	☐	☐	☐	■	☐
2. Police protection?	☐	☐	☐	■	☐
3. Schools?	☐	☐	☐	■	☐
4. Parks?	☐	☐	☐	■	☐
5. Other public facilities?	☐	☐	☐	■	☐

Impacts to public services were analyzed on pages 273 through 284 of the 2040 2040 General Plan EIR. Impacts related to police, fire protection, schools, libraries, and other public facilities were found to be less than significant. Impacts related to parks were analyzed on pages 345 and 346 of the 2040 General Plan EIR and the Plan was determined to have no impact.

a.1. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

a.2. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The Sonoma County Fire District (SCFD) works to administer fire protection in the Windsor region. The SCFD provides full-service delivery for fire protection, emergency medical response and hazardous spills. The SCFD employs a captain and an engineer on duty each day at each of the Towns three fire stations. Fire Station No. 1 is located at 8200 Old Redwood Highway, Fire Station No. 2 is located at 45 Lark Center Drive, and Fire Station No. 3 is located at 8600 Windsor Road.

The Police Department's policing and services programs are divided into four divisions: Police Administration and Support Services; Police Patrol and Traffic Enforcement; Police Investigations; and Community Services. There are 24 staff assigned to the Windsor Police Department consisting of 17 sworn deputies, three sergeants, one chief, and three civilians. The Windsor Police Department has 0.74 sworn officers per 1,000 residents after hours (Town of Windsor 2018). This is somewhat lower than the League of California Cities recommended standard of 1.4 to 1.6 sworn officers per 1,000 residents. The project would decrease the current number of officers per 1,000 residents to 0.6 sworn officers per 1,000 residents. However, 2040 General Plan policy PFS-6.1 states that, "the Town shall strive to ensure that law enforcement operations are expanded as the Town's population increases by establishing benchmark standards for evaluating the quality of law enforcement services on an annual basis," proposing to meet staffing benchmark in order to ensure that law enforcement operations expand as the Town's population increases. However, the Sheriff Department augments the Windsor Police Department for investigative services and after-hours patrol. Windsor also has an average response time of five minutes and 46 seconds, which is faster than the standard acceptable response rate of 6-8 minutes. According to Windsor Police Chief, Michael Raasch, development of project would not have an impact on police services (Raasch 2021).

The 2040 General Plan EIR evaluated fire and police protection demand impacts and found them to be less than significant with implementation of applicable 2040 General Plan goals and policies. Specifically, Goal PFS-1 of the 2040 General Plan Public Facilities and Services Element is intended to maintain the necessary level of service for the overall provision of public facilities and services in Windsor. The project is located in an area currently served by police and fire protection services and buildout of the site as proposed was assumed as part of the EIR analysis. The project would result in approximately 90 new residents, which added to the current population of 27,855 in Windsor, would result in a population of 27,945. This increase in population would not surpass the 2040 ABAG population projections of 32,805. Additionally, population would remain under the anticipated population growth of the 2040 General Plan (38,028 residents). 2040 General Plan Polices PFS-6.1, PFS-7.5, PFS-7.6, and PFS-7.8 would ensure that the Town maintains acceptable ratios and response times as the population grows. Therefore, the 2040 General Plan has accounted for the population growth associated with the proposed project and the level of services needed to ensure no additional police or fire protection facilities are necessary. There would be no new or

substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

a.3. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

The Town is served by the Windsor Unified School District (WUSD) that oversees seven schools including two charter schools. There is also a private school located in the town. The WUSD employs over 450 people, including over 230 teachers and has a student-teacher ratio of 21 students for every full-time teacher (Windsor Unified School District 2016). The closest schools to the project site are Mattie Washburn Elementary School, located at 75 Pleasant Avenue, 1.7 miles south of the project site, and Brooks Elementary School 2.6 miles northwest of the site. The project would add approximately 14 new students, based on a generation rate of 0.46 students per housing unit (Windsor Unified School District 2016).

While the project would increase student population, the 2040 General Plan EIR found impacts to be less than significant with implementation of 2040 General Plan policies. As described in Section 14, *Population and Housing*, the 2040 General Plan growth calculations account for the project as they provide for a number of new housing units to be developed in accordance with the growth expected under the 2040 General Plan's land use plan. Therefore, the project is part of planned growth in the region, including anticipated student population growth. Additionally, the project applicant would be required to pay development impact fees that would be used by the local school district to mitigate impact associated with long-term operation and maintenance of school facilities. Pursuant to Section 65995(h) of the California Government Code, payment of these fees is "deemed to be full and complete mitigation of impacts of any legislative or adjudicative act, or both, involving but not limited to, the planning, use, or development of real property, or any change in government organization or reorganization." Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

a.4. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

Project-related impacts to parks are discussed in Section 16, *Recreation.*

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

a.5. Would the project result in substantial adverse physical impacts associated with the provision of other new or physically altered public facilities, or the need for other new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The project does not include and would not require new or physically altered governmental facilities. Population growth facilitated by the proposed residential units included would generate additional demand for library services; however, the 2040 General Plan accounts for this population growth, which is consistent with population growth forecasts in the 2040 General Plan and Plan Bay Area 2040. 2040 General Plan Policy PFS-10.4 (New Library) directs the replacement of the existing Windsor Regional Library adjacent to existing public facilities, parks, schools, and/or the government center as part of the Windsor Civic Center Visioning Plan. According to the 2040 General Plan EIR, this policy would ensure that library services are available to the community as needed. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

16 Recreation

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■	☐
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☐	■

Impacts related to recreational facilities were analyzed on pages 345 and 346 of the 2040 General Plan EIR and were determined to have no impact.

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

According to the 2040 General Plan there are currently five community parks and 14 neighborhood parks totaling to 110 acres (Town of Windsor 2017b). The closest parks to the project site are Pleasant Oak Park 1.6 miles south of the project site, Pueblo Viejo Park 1.8 miles southwest of the project site, and Foothill Regional Park 2 miles north of the project site.

The project would result in approximately 90 new residents, which would increase the population of Windsor to 27,945, which is below 2040 population forecast from both Plan Bay Area 2040 and the 2040 General Plan. Therefore, the 2040 General Plan has accounted for this population growth and the level of park services needed. Additionally, the Town Council adopted the Parks and Recreation Master Plan which "identifies a planning blueprint to improve, protect, and expand the Town's network for parks, facilities and recreational services for the future, including sustainable goals for

appropriate maintenance and funding for existing and future development." The Master plan works to ensure that adequate parks, facilities, and recreation programs meet the needs of the Town's future residents, employees, and visitors. Additionally, the project would be required pay five impacts fees pursuant to the Quimby Act, including park development, recreational activities, open space, trail development, and public facilities. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The project does not propose the construction or expansion of recreational facilities. Therefore, there would be no impact and no further analysis in the EIR is required.

NO IMPACT

17 Transportation

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	■	☐	☐
b. Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	■	☐	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?	☐	☐	■	☐	☐
d. Result in inadequate emergency access?	☐	☐	■	☐	☐

Impacts to transportation were analyzed on pages 285 through 321 of the 2040 General Plan EIR. Impacts related to conflicts with applicable plans, ordinances, policies, or congestion management programs were found to be significant but mitigable. Impacts related to a change in air traffic patterns and the provision of adequate emergency access were found to be less than significant. Impacts from traffic-related hazards were determined to be significant and unavoidable as related to queuing at specific locations, despite implementation of mitigation. None of the intersections identified as having a significant queuing impact are near the project site. Mitigation in the 2040 General Plan EIR included Mitigation Measure T-1 Intersection Improvements, to reduce impacts associated with level of service (LOS). However, LOS is no longer considered an impact under CEQA. Although LOS is no longer considered in CEQA to determine if a project would have a transportation impact, LOS will be considered by Town staff as part of the General Plan consistency analysis for the project. Mitigation Measure T-2 was included in the 2040 General Plan EIR to reduce queuing

impacts. Mitigation Measures T-1 and T-2 are therefore not required for the project and can be viewed on pages 312 and 317 of the Final 2040 General Plan EIR, respectively.

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

More information is needed to conclude the impacts of the project to programs, plans, ordinances or policies addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. The project would require a detailed traffic study as part of the analysis to determine whether the project impacts would be significant. Therefore, this issue will be analyzed further in the Supplemental EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

CEQA Guidelines Section 15064.3 requires an analysis of a project's effect on vehicle miles traveled (VMT). The 2040 General Plan EIR was certified before the adoption of statewide VMT standards pursuant to Senate Bill 743, and before the *CEQA Guidelines* were amended to incorporate the issue of VMT in December 2018. This represents a change in the circumstances under which the 2040 General Plan EIR was prepared, requiring further analysis. Therefore, the project would have a potentially significant impact related to consistency with VMT standards, and this issue will be analyzed further in a Supplemental EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?

d. Would the project result in inadequate emergency access?

The project site would be accessible via Vinecrest Road to the north and Jensen Lane to the east. The project would also include an extension from Prince George Way to the east until the road extension would intersect with the new segment of Jensen Lane. Portland Way, a proposed roadway, would bisect the project site from north to south and connect to Vinecrest Road and Prince George Way. Potentially new hazards due to geometric design features (e.g., pedestrian crossings of dangerous intersections) and effects on emergency access that may result from new roadways and the extension of existing roadways would be potentially significant and will be analyzed further in a Subsequent EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

18 Tribal Cultural Resources

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in a Public Resources Code Section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
a. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	☐	■	☐	☐	☐
b. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in	☐	■	☐	☐	☐

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.					

Impacts to tribal cultural resources were analyzed on pages 339 through 343 of the 2040 General Plan EIR. Impacts related to tribal cultural resources were found to be significant but mitigable. Mitigation Measures CR-1, CR-2, and CR-4, included in the 2040 General Plan EIR, are reproduced in Section 5, *Cultural Resources.*

a. Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

b. Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1?

On July 1, 2015, AB 52 was enacted. The law expands CEQA by defining a new resource category, tribal cultural resources. AB 52 establishes that "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment" (PRC Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3).

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project." Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

Impacts to tribal resources were found to be potentially significant and will need further evaluation. These topics will need to be discussed in the Supplemental EIR.

SUBSTANTIAL CHANGE IN CIRCUMSTANCES THAT MAY REQUIRE MAJOR EIR REVISIONS

19 Utilities and Service Systems

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Would the project:					
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	■	☐
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	■	☐
c. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	■	☐

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	■	☐
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	■	☐

Impacts to utilities and service systems were analyzed on pages 323 through 337 of the 2040 General Plan EIR. Impacts related to water, wastewater treatment, solid waste, and stormwater drainage facilities were found to be less than significant.

a. Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

c. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Wastewater

The Windsor Water District (WWD) owns, operates, and maintains the wastewater collection system that includes approximately 94 miles of public sewer lines, 1,728 manholes, 525 cleanouts, and approximately 6,100 private sewer laterals throughout the Town (Town of Windsor 2015). Existing pipelines range in diameter from 4-inches to 42-inches and include two siphons located at Los Amigos Road and Rio Russo Drive. The Town collects its wastewater and treats it to disinfected tertiary levels at its water reclamation plant, the Windsor Wastewater Treatment Reclamation and Disposal Facility (WWTRDF). The WWTRDF is designed with a capacity of 2.25 million gallons per day (MGD) average dry weather flow, and 7.2 MGD, peak weekly wet weather flow. The current Average Dry Weather Flow (ADWF) seen at the water reclamation facility is 1.4 MGD (Town of Windsor

2020). The Water Reclamation Division is responsible for the treatment, storage, and disposal of the Town's Wastewater.

As shown in Table 8, the project's estimated wastewater generation would be approximately 6,633 gallons per day (Town of Windsor 2015). The project would use approximately 0.8 percent of the available unused capacity. This increase would be within the WWTRDF's capacity for collection and treatment. The project would increase the population of Windsor. However, the project is consistent with the 2040 General Plan land use designation for the site, and the population growth facilitated by the proposed residential units would be consistent with the 2040 General Plan population growth forecast. With implementation of 2040 General Plan policies, sufficient wastewater treatment facilities would be available for the project wastewater generation. Therefore, wastewater capacity would be sufficient to serve the project and the project would not require the construction of wastewater infrastructure.

Table 8 Estimated Wastewater Generation

Land Use	Size	Generation Rate*	Total (gallons/year)	Total (gallons/day)
Residential (Single Family)	30 units	77,394 gallons/unit/year	2,321,820	6,633

Notes: sf = square feet

* Rates from 2015 UWMP

Water

The 2040 General Plan EIR states that the Town has enough water supply capacity to meet current demands, as well as demands during normal water years through 2040. According to the Town's 2020 Urban Water Management Plan, based on the 2040 population projection that includes the proposed project, the Town is expected to experience water supply shortfalls in single-dry year scenario conditions by 2030 if local groundwater wells are not developed as potable supply. The Urban Water Management Plan (UWMP) analysis estimated that if the Town were to develop local groundwater well supplies, the Town would experience water supply shortages in single-dry year conditions by 2035. It is projected that in a "multiple-dry -year scenario, the Town will experience water supply shortfalls by 2040. The drought risk assessment conducted for the 2020 UWMP found that without additional water supply, a multi-year drought in current conditions would create a water supply shortfall requiring the Town to implement mandatory water use restrictions to reduce water consumption. This was projected to occur in all years of a multi-year drought (Town of Windsor 2021).

Water for the project would be provided by the Windsor Water District (WWD) via existing utilities adjacent to the project site. The Town's potable water supply is provided from its wells in the Russian River Well Field into the water distribution system. Water is also purchased from the Sonoma County Water Agency's (SCWA) Santa Rosa aqueduct. Windsor's water supply system includes 4,725-acre feet (AF) from the Russian River Well Field, 900 AF from the SCWA aqueduct with a combined system supply of 5,625 AFY. In addition, Windsor has a storage capacity of over 5 million gallons.

The project's estimated water demand would be approximately 2,786,184 million gallons per year (approximately 120 percent of wastewater generation), approximately 0.17 percent of Windsor's annual water supply. However, the project would adhere to the CCR Title 24, Part 11 (CALGreen) that requires a 20 percent reduction in residential indoor water use that would lower potential

water demand. The project would also comply with Section 12-3-820 of the Windsor Ordinance Code that requires water conservation methods including prohibiting washing hard or paved surfaces, causing excessive water flow when watering landscaping, and operating water features such as decorative fountains. Section 12-3-825 of the Windsor Ordinance Code further prohibits non-essential water use. Given that the project would be required to implement water conservation features and would be consistent with the site's 2040 General Plan land use designation, potential water supply associated with buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR. The project site would be served by adequate water supplies by the WWD, and no new facilities will be needed.

Stormwater

The project would be designed and engineered with drainage features appropriate to accommodate the needs of the project and mimic the historical flow patterns. Downspouts from roof gutters would be disconnected and discharged to rain gardens in order to reduce stormwater runoff. Street sheet flow from lots 17-26 and 30 would be collected by the curb and gutter proposed on Portland Way and extension of Prince George Way. The project would adhere to landscape requirements pursuant to Town Ordinance 2015-73, which requires landscaping and compacted soil to promote infiltration. Drain areas would utilize a roadside bio-retention with pervious concrete gutters. Roadside bio retention and bioretention beds will help reduce the volume of runoff by providing storm water storage, as well as mitigate pollutants. Additionally, the project proposes a level of treatment and volume capture of 100 percent. Thus, the volume of stormwater runoff would not exceed the capacity of the storm drain system serving the site. The proposed project would not require the construction of new off-site stormwater drainage facilities or expansion of existing facilities. Impacts would be less than significant.

Electricity, Natural Gas, and Telecommunications

The 2040 General Plan EIR states that electricity and natural gas service in the Town of Windsor is provided by PG&E. Long-term operation of development projects would require permanent grid connections for electricity and natural gas service to power internal and exterior building lighting, and heating and cooling systems. Electricity and natural gas consumption were estimated for buildout of the 2040 General Plan. The project is consistent with the 2040 General Plan land use designation for the site, and the population growth under the project would be consistent with the assumptions provided in the 2040 General Plan EIR. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Based on the project's estimated wastewater generation, water demand can be estimated using an industry standard assumption that water use is approximately 120 percent of wastewater generation. Therefore, the project's gross water demand would be approximately *7,959 gallons* per day (approximately 0.02 acre-feet per day), or approximately 2,786,184 gallons per year (approximately 8.5-acre feet per year). The proposed project would use water for faucets, toilets, landscape irrigation and miscellaneous uses related to residences. As described under Item a above,

the Town of Windsor owns and operates its own water distribution system and receives its water from the Russian River Well Field and the *Sonoma County Water Agency's Santa Rosa aqueduct* The drought risk assessment conducted for the 2020 UWMP found that without additional water supply, a multi-year drought in current conditions would create a water supply shortfall requiring the Town to implement mandatory water use restrictions to reduce water consumption. This was projected to occur in all years of a multi-year drought (Town of Windsor 2021). However, the project would adhere to the CCR Title 24, Part 11 (CALGreen) that requires a 20 percent reduction in residential indoor water use that would lower potential water demand. The project would also comply with Section 12-3-820 of the Windsor Ordinance Code that requires water conservation methods including prohibiting washing hard or paved surfaces, causing excessive water flow when watering landscaping, and operating water features such as decorative fountains. Section 12-3-825 of the Windsor Ordinance Code further prohibits non-essential water use

As described in Section 14, *Population and Housing*, the project would result in an incremental increase in population within the Town. Additionally, given that the project would be consistent with the site's 2040 General Plan land use designation, potential impacts to with water supplies associated with buildout of the project site have been anticipated by the Town and analyzed in the 2040 General Plan EIR and 2020 UWMP. Therefore, the proposed project is consistent with the anticipated development and growth in the 2040 General Plan and is covered by the analysis in the 2020 UWMP. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

d. Would the project generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

e. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The Town, through Sonoma County Resource Recovery, provides solid waste, recycling, and composting services for residential, commercial, and industrial areas, with weekly curbside pickup. Hazardous waste collection and disposal are provided by the Sonoma County Waste Management Agency. All waste is disposed at the Healdsburg Transfer Station before processing. Based on the 2040 General Plan EIR, the Central Landfill's solid waste capacity is sufficient to meet the needs of projected growth under the 2040 General Plan. As the project would be consistent with the 2040 General Plan land use designation for the project site, the projected population growth for the project was adequately considered in the 2040 General Plan EIR. Additionally, the 2040 General Plan contains policies to reduce solid waste impacts, including Policies PFS-5.1, PFS-5.6, and PFS-5.8. The project would have no impacts beyond those analyzed previously.

As the project would be consistent with the 2040 General Plan land use designation for the project site, the projected solid waste generation for the project was adequately considered in the 2040 General Plan EIR. Therefore, there would be no new or substantially more severe impacts than what was analyzed in the 2040 General Plan EIR, and further analysis is not warranted.

LESS THAN SIGNIFICANT IMPACT/NO CHANGES OR NEW INFORMATION REQUIRING PREPARATION OF AN EIR

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20 Wildfire

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
a. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	■	☐	☐	☐
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	■	☐	☐	☐
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	■	☐	☐	☐

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
d. Expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	■	☐	☐	☐

The 2040 General Plan EIR discusses wildland fire impacts on pages 192 through 194 and finds that impacts related to wildland fires in the Town would be less than significant.

a. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?

b. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

c. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

d. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The project site is not in a State Responsibility Area (SRA) or lands classified as Very High Fire Hazard Severity Zone. However, it is adjacent to SRA lands classified as Moderate Fire Hazard Severity Zone. While the project site is not located in a fire on a fire hazard zone, the 2019 Kincade Fire reached the Town and resulted in spot fires on the site and the entire Town being evacuated. Therefore, further analysis will be required, and this item will be discussed in the Supplemental EIR.

SUBSTANTIAL CHANGE IN CIRCUMSTANCES THAT MAY REQUIRE MAJOR EIR REVISIONS

21 Mandatory Findings of Significance

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
Does the project:					
a. Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	■	☐	☐
b. Have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the					

	Substantial Change in Project That May Require Major EIR Revisions	Substantial Change in Circum-stances That May Require Major EIR Revisions	New Information Showing Potentially New or Greater Significant Effects than Previous EIR	Less than Significant Impact/No Changes or New Information Requiring Preparation of an EIR	No Impact
effects of probable future projects)?	☐	☐	■	☐	☐
c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐	☐

a. Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

As mentioned in Section 5, *Cultural Resources,* and Section 18, *Tribal Cultural Resources*, the project would have a potentially significant impact to examples of major periods of California history or prehistory. Additionally, as discussed in Section 4, *Biological Resources*, the project has the potential to impact sensitive biological resources on the project site, including sensitive habitat and species.) Impacts would be discussed further in the Supplemental EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Cumulatively, the project combined with other past, present, and reasonably foreseeable future projects, as projected in the 2040 General Plan, would result in a physical change to the Town of Windsor. The project would have potentially significant cumulative impacts, and this issue will be analyzed further in the Supplemental EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

In general, impacts to human beings are associated with air quality, GHG emissions, hazards and hazardous materials, wildfire, and noise impacts. As detailed in the analyses for air quality, GHG emissions, hazards and hazardous materials, and noise, the proposed project would not result, either directly or indirectly, in substantial adverse hazards related to air quality, hazardous materials, or noise. Compliance with applicable rules and regulations would reduce potential impacts on human beings. However, the project site is susceptible to wildfires, which can have an adverse effect to human beings through pollutant concentrations or direct impacts from wildfires. Therefore, further analysis will be required, and this item will be discussed in the Supplemental EIR.

NEW INFORMATION SHOWING POTENTIALLY NEW OR GREATER SIGNIFICANT EFFECTS THAN PREVIOUS EIR

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List of Preparers

Rincon Consultants, Inc. prepared this IS-MND under contract to the Town of Windsor. Persons involved in data gathering analysis, project management, and quality control are listed below.

RINCON CONSULTANTS, INC.

Matt Maddox, MESM AIPC, Principal
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Appendix A

California Emissions Estimator Model Outputs

Estates at Ross Ranch - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Estates at Ross Ranch

Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	30.00	Dwelling Unit	17.17	54,000.00	90

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Populaiton from DOF and acreage is from project description

Demolition -

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	9.74	17.17
tblLandUse	Population	86.00	90.00

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1731	1.6864	1.4701	2.7700e-003	0.2458	0.0799	0.3257	0.1078	0.0744	0.1822	0.0000	241.4049	241.4049	0.0656	6.0000e-004	243.2237
2023	0.5645	1.6708	1.9364	3.3000e-003	0.0128	0.0808	0.0936	3.4400e-003	0.0760	0.0794	0.0000	285.2896	285.2896	0.0660	1.1700e-003	287.2871
Maximum	**0.5645**	**1.6864**	**1.9364**	**3.3000e-003**	**0.2458**	**0.0808**	**0.3257**	**0.1078**	**0.0760**	**0.1822**	**0.0000**	**285.2896**	**285.2896**	**0.0660**	**1.1700e-003**	**287.2871**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1731	1.6864	1.4701	2.7700e-003	0.2458	0.0799	0.3257	0.1078	0.0744	0.1822	0.0000	241.4047	241.4047	0.0656	6.0000e-004	243.2234
2023	0.5645	1.6708	1.9364	3.3000e-003	0.0128	0.0808	0.0936	3.4400e-003	0.0760	0.0794	0.0000	285.2892	285.2892	0.0660	1.1700e-003	287.2868
Maximum	**0.5645**	**1.6864**	**1.9364**	**3.3000e-003**	**0.2458**	**0.0808**	**0.3257**	**0.1078**	**0.0760**	**0.1822**	**0.0000**	**285.2892**	**285.2892**	**0.0660**	**1.1700e-003**	**287.2868**

Estates at Ross Ranch - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-10-2022**	**9-9-2022**	1.1549	1.1549
2	**9-10-2022**	**12-9-2022**	0.5704	0.5704
3	**12-10-2022**	**3-9-2023**	0.5301	0.5301
4	**3-10-2023**	**6-9-2023**	0.5303	0.5303
5	**6-10-2023**	**9-9-2023**	0.5302	0.5302
6	**9-10-2023**	**9-30-2023**	0.1210	0.1210
		Highest	1.1549	1.1549

Estates at Ross Ranch - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4324	6.4400e-003	0.4798	5.4000e-004		0.0383	0.0383		0.0383	0.0383	3.8133	1.3002	5.1135	7.5500e-003	2.2000e-004	5.3673
Energy	4.3100e-003	0.0368	0.0157	2.3000e-004		2.9800e-003	2.9800e-003		2.9800e-003	2.9800e-003	0.0000	42.6316	42.6316	8.2000e-004	7.8000e-004	42.8850
Mobile	0.1166	0.1307	1.0808	2.2200e-003	0.2382	1.6500e-003	0.2399	0.0636	1.5400e-003	0.0652	0.0000	208.4735	208.4735	0.0139	0.0101	211.8319
Waste						0.0000	0.0000		0.0000	0.0000	7.6731	0.0000	7.6731	0.4535	0.0000	19.0097
Water						0.0000	0.0000		0.0000	0.0000	0.6201	0.0000	0.6201	0.0637	1.5000e-003	2.6606
Total	**0.5533**	**0.1740**	**1.5763**	**2.9900e-003**	**0.2382**	**0.0429**	**0.2811**	**0.0636**	**0.0428**	**0.1065**	**12.1065**	**252.4053**	**264.5118**	**0.5394**	**0.0126**	**281.7544**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4324	6.4400e-003	0.4798	5.4000e-004		0.0383	0.0383		0.0383	0.0383	3.8133	1.3002	5.1135	7.5500e-003	2.2000e-004	5.3673
Energy	4.3100e-003	0.0368	0.0157	2.3000e-004		2.9800e-003	2.9800e-003		2.9800e-003	2.9800e-003	0.0000	42.6316	42.6316	8.2000e-004	7.8000e-004	42.8850
Mobile	0.1166	0.1307	1.0808	2.2200e-003	0.2382	1.6500e-003	0.2399	0.0636	1.5400e-003	0.0652	0.0000	208.4735	208.4735	0.0139	0.0101	211.8319
Waste						0.0000	0.0000		0.0000	0.0000	7.6731	0.0000	7.6731	0.4535	0.0000	19.0097
Water						0.0000	0.0000		0.0000	0.0000	0.6201	0.0000	0.6201	0.0637	1.5000e-003	2.6606
Total	**0.5533**	**0.1740**	**1.5763**	**2.9900e-003**	**0.2382**	**0.0429**	**0.2811**	**0.0636**	**0.0428**	**0.1065**	**12.1065**	**252.4053**	**264.5118**	**0.5394**	**0.0126**	**281.7544**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/10/2022	7/7/2022	5	20	
2	Site Preparation	Site Preparation	7/8/2022	7/21/2022	5	10	
3	Grading	Grading	7/22/2022	9/1/2022	5	30	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4	Building Construction	Building Construction	9/2/2022	10/26/2023	5	300	
5	Paving	Paving	10/27/2023	11/23/2023	5	20	
6	Architectural Coating	Architectural Coating	11/24/2023	12/21/2023	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 109,350; Residential Outdoor: 36,450; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Estates at Ross Ranch - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	5.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	11.00	3.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-004	0.0000	5.8000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**	**5.8000e-004**	**0.0124**	**0.0130**	**9.0000e-005**	**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	4.3000e-004	9.0000e-005	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1567	0.1567	1.0000e-005	2.0000e-005	0.1642
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.0000e-004	3.5900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9533	0.9533	3.0000e-005	3.0000e-005	0.9622
Total	**4.2000e-004**	**7.3000e-004**	**3.6800e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.1100**	**1.1100**	**4.0000e-005**	**5.0000e-005**	**1.1265**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.8000e-004	0.0000	5.8000e-004	9.0000e-005	0.0000	9.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**	**5.8000e-004**	**0.0124**	**0.0130**	**9.0000e-005**	**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.0000e-005	4.3000e-004	9.0000e-005	0.0000	4.0000e-005	0.0000	5.0000e-005	1.0000e-005	0.0000	2.0000e-005	0.0000	0.1567	0.1567	1.0000e-005	2.0000e-005	0.1642
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.1000e-004	3.0000e-004	3.5900e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9533	0.9533	3.0000e-005	3.0000e-005	0.9622
Total	**4.2000e-004**	**7.3000e-004**	**3.6800e-003**	**1.0000e-005**	**1.2300e-003**	**1.0000e-005**	**1.2400e-003**	**3.3000e-004**	**1.0000e-005**	**3.4000e-004**	**0.0000**	**1.1100**	**1.1100**	**4.0000e-005**	**5.0000e-005**	**1.1265**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0983	0.0000	0.0983	0.0505	0.0000	0.0505	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0983**	**8.0600e-003**	**0.1064**	**0.0505**	**7.4200e-003**	**0.0579**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.8000e-004	2.1500e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5720	0.5720	2.0000e-005	2.0000e-005	0.5773
Total	**2.5000e-004**	**1.8000e-004**	**2.1500e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5720**	**0.5720**	**2.0000e-005**	**2.0000e-005**	**0.5773**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0983	0.0000	0.0983	0.0505	0.0000	0.0505	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0983**	**8.0600e-003**	**0.1064**	**0.0505**	**7.4200e-003**	**0.0579**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.5000e-004	1.8000e-004	2.1500e-003	1.0000e-005	7.1000e-004	0.0000	7.2000e-004	1.9000e-004	0.0000	1.9000e-004	0.0000	0.5720	0.5720	2.0000e-005	2.0000e-005	0.5773
Total	**2.5000e-004**	**1.8000e-004**	**2.1500e-003**	**1.0000e-005**	**7.1000e-004**	**0.0000**	**7.2000e-004**	**1.9000e-004**	**0.0000**	**1.9000e-004**	**0.0000**	**0.5720**	**0.5720**	**2.0000e-005**	**2.0000e-005**	**0.5773**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1381	0.0000	0.1381	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8019	81.8019	0.0265	0.0000	82.4633
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1381**	**0.0245**	**0.1626**	**0.0548**	**0.0226**	**0.0774**	**0.0000**	**81.8019**	**81.8019**	**0.0265**	**0.0000**	**82.4633**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	5.9000e-004	7.1700e-003	2.0000e-005	2.3700e-003	1.0000e-005	2.3800e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.9065	1.9065	6.0000e-005	6.0000e-005	1.9244
Total	**8.2000e-004**	**5.9000e-004**	**7.1700e-003**	**2.0000e-005**	**2.3700e-003**	**1.0000e-005**	**2.3800e-003**	**6.3000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**1.9065**	**1.9065**	**6.0000e-005**	**6.0000e-005**	**1.9244**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1381	0.0000	0.1381	0.0548	0.0000	0.0548	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8018	81.8018	0.0265	0.0000	82.4632
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1381**	**0.0245**	**0.1626**	**0.0548**	**0.0226**	**0.0774**	**0.0000**	**81.8018**	**81.8018**	**0.0265**	**0.0000**	**82.4632**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.2000e-004	5.9000e-004	7.1700e-003	2.0000e-005	2.3700e-003	1.0000e-005	2.3800e-003	6.3000e-004	1.0000e-005	6.4000e-004	0.0000	1.9065	1.9065	6.0000e-005	6.0000e-005	1.9244
Total	**8.2000e-004**	**5.9000e-004**	**7.1700e-003**	**2.0000e-005**	**2.3700e-003**	**1.0000e-005**	**2.3800e-003**	**6.3000e-004**	**1.0000e-005**	**6.4000e-004**	**0.0000**	**1.9065**	**1.9065**	**6.0000e-005**	**6.0000e-005**	**1.9244**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0734	0.6715	0.7036	1.1600e-003		0.0348	0.0348		0.0327	0.0327	0.0000	99.6419	99.6419	0.0239	0.0000	100.2386
Total	**0.0734**	**0.6715**	**0.7036**	**1.1600e-003**		**0.0348**	**0.0348**		**0.0327**	**0.0327**	**0.0000**	**99.6419**	**99.6419**	**0.0239**	**0.0000**	**100.2386**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	7.2100e-003	2.1000e-003	3.0000e-005	8.5000e-004	7.0000e-005	9.2000e-004	2.4000e-004	7.0000e-005	3.2000e-004	0.0000	2.6568	2.6568	6.0000e-005	3.9000e-004	2.7756
Worker	1.3000e-003	9.4000e-004	0.0113	3.0000e-005	3.7400e-003	2.0000e-005	3.7600e-003	9.9000e-004	2.0000e-005	1.0100e-003	0.0000	3.0060	3.0060	9.0000e-005	9.0000e-005	3.0342
Total	**1.5800e-003**	**8.1500e-003**	**0.0134**	**6.0000e-005**	**4.5900e-003**	**9.0000e-005**	**4.6800e-003**	**1.2300e-003**	**9.0000e-005**	**1.3300e-003**	**0.0000**	**5.6628**	**5.6628**	**1.5000e-004**	**4.8000e-004**	**5.8098**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0734	0.6715	0.7036	1.1600e-003		0.0348	0.0348		0.0327	0.0327	0.0000	99.6417	99.6417	0.0239	0.0000	100.2385
Total	**0.0734**	**0.6715**	**0.7036**	**1.1600e-003**		**0.0348**	**0.0348**		**0.0327**	**0.0327**	**0.0000**	**99.6417**	**99.6417**	**0.0239**	**0.0000**	**100.2385**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	7.2100e-003	2.1000e-003	3.0000e-005	8.5000e-004	7.0000e-005	9.2000e-004	2.4000e-004	7.0000e-005	3.2000e-004	0.0000	2.6568	2.6568	6.0000e-005	3.9000e-004	2.7756
Worker	1.3000e-003	9.4000e-004	0.0113	3.0000e-005	3.7400e-003	2.0000e-005	3.7600e-003	9.9000e-004	2.0000e-005	1.0100e-003	0.0000	3.0060	3.0060	9.0000e-005	9.0000e-005	3.0342
Total	**1.5800e-003**	**8.1500e-003**	**0.0134**	**6.0000e-005**	**4.5900e-003**	**9.0000e-005**	**4.6800e-003**	**1.2300e-003**	**9.0000e-005**	**1.3300e-003**	**0.0000**	**5.6628**	**5.6628**	**1.5000e-004**	**4.8000e-004**	**5.8098**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1683	1.5392	1.7381	2.8800e-003		0.0749	0.0749		0.0705	0.0705	0.0000	248.0311	248.0311	0.0590	0.0000	249.5062
Total	**0.1683**	**1.5392**	**1.7381**	**2.8800e-003**		**0.0749**	**0.0749**		**0.0705**	**0.0705**	**0.0000**	**248.0311**	**248.0311**	**0.0590**	**0.0000**	**249.5062**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4000e-004	0.0143	4.4600e-003	7.0000e-005	2.1100e-003	8.0000e-005	2.1900e-003	6.1000e-004	8.0000e-005	6.9000e-004	0.0000	6.3364	6.3364	1.3000e-004	9.4000e-004	6.6190
Worker	3.0100e-003	2.0600e-003	0.0261	8.0000e-005	9.3000e-003	5.0000e-005	9.3500e-003	2.4700e-003	4.0000e-005	2.5200e-003	0.0000	7.2892	7.2892	2.1000e-004	2.0000e-004	7.3540
Total	**3.3500e-003**	**0.0163**	**0.0306**	**1.5000e-004**	**0.0114**	**1.3000e-004**	**0.0115**	**3.0800e-003**	**1.2000e-004**	**3.2100e-003**	**0.0000**	**13.6255**	**13.6255**	**3.4000e-004**	**1.1400e-003**	**13.9730**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1683	1.5392	1.7381	2.8800e-003		0.0749	0.0749		0.0705	0.0705	0.0000	248.0308	248.0308	0.0590	0.0000	249.5059
Total	**0.1683**	**1.5392**	**1.7381**	**2.8800e-003**		**0.0749**	**0.0749**		**0.0705**	**0.0705**	**0.0000**	**248.0308**	**248.0308**	**0.0590**	**0.0000**	**249.5059**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.4000e-004	0.0143	4.4600e-003	7.0000e-005	2.1100e-003	8.0000e-005	2.1900e-003	6.1000e-004	8.0000e-005	6.9000e-004	0.0000	6.3364	6.3364	1.3000e-004	9.4000e-004	6.6190
Worker	3.0100e-003	2.0600e-003	0.0261	8.0000e-005	9.3000e-003	5.0000e-005	9.3500e-003	2.4700e-003	4.0000e-005	2.5200e-003	0.0000	7.2892	7.2892	2.1000e-004	2.0000e-004	7.3540
Total	**3.3500e-003**	**0.0163**	**0.0306**	**1.5000e-004**	**0.0114**	**1.3000e-004**	**0.0115**	**3.0800e-003**	**1.2000e-004**	**3.2100e-003**	**0.0000**	**13.6255**	**13.6255**	**3.4000e-004**	**1.1400e-003**	**13.9730**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0103**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.6000e-004	3.3300e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9290	0.9290	3.0000e-005	3.0000e-005	0.9372
Total	**3.8000e-004**	**2.6000e-004**	**3.3300e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.1900e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**0.9290**	**0.9290**	**3.0000e-005**	**3.0000e-005**	**0.9372**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0103**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.8000e-004	2.6000e-004	3.3300e-003	1.0000e-005	1.1900e-003	1.0000e-005	1.1900e-003	3.2000e-004	1.0000e-005	3.2000e-004	0.0000	0.9290	0.9290	3.0000e-005	3.0000e-005	0.9372
Total	**3.8000e-004**	**2.6000e-004**	**3.3300e-003**	**1.0000e-005**	**1.1900e-003**	**1.0000e-005**	**1.1900e-003**	**3.2000e-004**	**1.0000e-005**	**3.2000e-004**	**0.0000**	**0.9290**	**0.9290**	**3.0000e-005**	**3.0000e-005**	**0.9372**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3801					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.3821**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1239	0.1239	0.0000	0.0000	0.1250
Total	**5.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1239**	**0.1239**	**0.0000**	**0.0000**	**0.1250**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3801					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.3821**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.0000e-005	4.0000e-005	4.4000e-004	0.0000	1.6000e-004	0.0000	1.6000e-004	4.0000e-005	0.0000	4.0000e-005	0.0000	0.1239	0.1239	0.0000	0.0000	0.1250
Total	**5.0000e-005**	**4.0000e-005**	**4.4000e-004**	**0.0000**	**1.6000e-004**	**0.0000**	**1.6000e-004**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**0.0000**	**0.1239**	**0.1239**	**0.0000**	**0.0000**	**0.1250**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1166	0.1307	1.0808	2.2200e-003	0.2382	1.6500e-003	0.2399	0.0636	1.5400e-003	0.0652	0.0000	208.4735	208.4735	0.0139	0.0101	211.8319
Unmitigated	0.1166	0.1307	1.0808	2.2200e-003	0.2382	1.6500e-003	0.2399	0.0636	1.5400e-003	0.0652	0.0000	208.4735	208.4735	0.0139	0.0101	211.8319

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	283.20	286.20	256.50	646,261	646,261
Total	283.20	286.20	256.50	646,261	646,261

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.553342	0.058522	0.188738	0.121080	0.023016	0.005623	0.010412	0.007562	0.000987	0.000568	0.026444	0.000834	0.002871

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	4.3100e-003	0.0368	0.0157	2.3000e-004		2.9800e-003	2.9800e-003		2.9800e-003	2.9800e-003	0.0000	42.6316	42.6316	8.2000e-004	7.8000e-004	42.8850
NaturalGas Unmitigated	4.3100e-003	0.0368	0.0157	2.3000e-004		2.9800e-003	2.9800e-003		2.9800e-003	2.9800e-003	0.0000	42.6316	42.6316	8.2000e-004	7.8000e-004	42.8850

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	798886	4.3100e-003	0.0368	0.0157	2.3000e-004		2.9800e-003	2.9800e-003		2.9800e-003	2.9800e-003	0.0000	42.6316	42.6316	8.2000e-004	7.8000e-004	42.8850
Total		**4.3100e-003**	**0.0368**	**0.0157**	**2.3000e-004**		**2.9800e-003**	**2.9800e-003**		**2.9800e-003**	**2.9800e-003**	**0.0000**	**42.6316**	**42.6316**	**8.2000e-004**	**7.8000e-004**	**42.8850**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Single Family Housing	798886	4.3100e-003	0.0368	0.0157	2.3000e-004		2.9800e-003	2.9800e-003		2.9800e-003	2.9800e-003	0.0000	42.6316	42.6316	8.2000e-004	7.8000e-004	42.8850
Total		**4.3100e-003**	**0.0368**	**0.0157**	**2.3000e-004**		**2.9800e-003**	**2.9800e-003**		**2.9800e-003**	**2.9800e-003**	**0.0000**	**42.6316**	**42.6316**	**8.2000e-004**	**7.8000e-004**	**42.8850**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	234997	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Single Family Housing	234997	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

Estates at Ross Ranch - Bay Area AQMD Air District, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4324	6.4400e-003	0.4798	5.4000e-004		0.0383	0.0383		0.0383	0.0383	3.8133	1.3002	5.1135	7.5500e-003	2.2000e-004	5.3673
Unmitigated	0.4324	6.4400e-003	0.4798	5.4000e-004		0.0383	0.0383		0.0383	0.0383	3.8133	1.3002	5.1135	7.5500e-003	2.2000e-004	5.3673

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0380					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1768	3.8800e-003	0.2571	5.3000e-004		0.0371	0.0371		0.0371	0.0371	3.8133	0.9363	4.7496	7.2000e-003	2.2000e-004	4.9947
Landscaping	6.6900e-003	2.5700e-003	0.2227	1.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	0.3639	0.3639	3.5000e-004	0.0000	0.3726
Total	**0.4324**	**6.4500e-003**	**0.4798**	**5.4000e-004**		**0.0383**	**0.0383**		**0.0383**	**0.0383**	**3.8133**	**1.3002**	**5.1135**	**7.5500e-003**	**2.2000e-004**	**5.3673**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0380					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2109					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.1768	3.8800e-003	0.2571	5.3000e-004		0.0371	0.0371		0.0371	0.0371	3.8133	0.9363	4.7496	7.2000e-003	2.2000e-004	4.9947
Landscaping	6.6900e-003	2.5700e-003	0.2227	1.0000e-005		1.2300e-003	1.2300e-003		1.2300e-003	1.2300e-003	0.0000	0.3639	0.3639	3.5000e-004	0.0000	0.3726
Total	**0.4324**	**6.4500e-003**	**0.4798**	**5.4000e-004**		**0.0383**	**0.0383**		**0.0383**	**0.0383**	**3.8133**	**1.3002**	**5.1135**	**7.5500e-003**	**2.2000e-004**	**5.3673**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.6201	0.0637	1.5000e-003	2.6606
Unmitigated	0.6201	0.0637	1.5000e-003	2.6606

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.95462 / 1.23226	0.6201	0.0637	1.5000e-003	2.6606
Total		**0.6201**	**0.0637**	**1.5000e-003**	**2.6606**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Single Family Housing	1.95462 / 1.23226	0.6201	0.0637	1.5000e-003	2.6606
Total		**0.6201**	**0.0637**	**1.5000e-003**	**2.6606**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	7.6731	0.4535	0.0000	19.0097
Unmitigated	7.6731	0.4535	0.0000	19.0097

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	37.8	7.6731	0.4535	0.0000	19.0097
Total		**7.6731**	**0.4535**	**0.0000**	**19.0097**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Single Family Housing	37.8	7.6731	0.4535	0.0000	19.0097
Total		**7.6731**	**0.4535**	**0.0000**	**19.0097**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Estates at Ross Ranch - Bay Area AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Estates at Ross Ranch

Bay Area AQMD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	30.00	Dwelling Unit	17.17	54,000.00	90

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Populaiton from DOF and acreage is from project description

Demolition -

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	9.74	17.17
tblLandUse	Population	86.00	90.00

2.0 Emissions Summary

Estates at Ross Ranch - Bay Area AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6830	38.8786	29.5585	0.0636	19.8049	1.6358	21.4182	10.1417	1.5049	11.6260	0.0000	6,161.0231	6,161.0231	1.9483	0.0121	6,210.8421
2023	38.2099	14.5307	16.5481	0.0283	0.1232	0.7010	0.8116	0.0327	0.6596	0.6894	0.0000	2,700.6212	2,700.6212	0.7167	0.0115	2,719.3420
Maximum	**38.2099**	**38.8786**	**29.5585**	**0.0636**	**19.8049**	**1.6358**	**21.4182**	**10.1417**	**1.5049**	**11.6260**	**0.0000**	**6,161.0231**	**6,161.0231**	**1.9483**	**0.0121**	**6,210.8421**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6830	38.8786	29.5585	0.0636	19.8049	1.6358	21.4182	10.1417	1.5049	11.6260	0.0000	6,161.0231	6,161.0231	1.9483	0.0121	6,210.8421
2023	38.2099	14.5307	16.5481	0.0283	0.1232	0.7010	0.8116	0.0327	0.6596	0.6894	0.0000	2,700.6212	2,700.6212	0.7167	0.0115	2,719.3420
Maximum	**38.2099**	**38.8786**	**29.5585**	**0.0636**	**19.8049**	**1.6358**	**21.4182**	**10.1417**	**1.5049**	**11.6260**	**0.0000**	**6,161.0231**	**6,161.0231**	**1.9483**	**0.0121**	**6,210.8421**

Estates at Ross Ranch - Bay Area AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Estates at Ross Ranch - Bay Area AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609
Energy	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Mobile	0.7297	0.6755	6.0477	0.0132	1.3913	9.3000e-003	1.4006	0.3706	8.6700e-003	0.3792		1,361.2459	1,361.2459	0.0801	0.0594	1,380.9493
Total	**33.2811**	**1.5044**	**48.8162**	**0.0903**	**1.3913**	**5.7250**	**7.1163**	**0.3706**	**5.7244**	**6.0949**	**611.3502**	**1,808.4942**	**2,419.8443**	**0.8452**	**0.1073**	**2,472.9379**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609
Energy	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Mobile	0.7297	0.6755	6.0477	0.0132	1.3913	9.3000e-003	1.4006	0.3706	8.6700e-003	0.3792		1,361.2459	1,361.2459	0.0801	0.0594	1,380.9493
Total	**33.2811**	**1.5044**	**48.8162**	**0.0903**	**1.3913**	**5.7250**	**7.1163**	**0.3706**	**5.7244**	**6.0949**	**611.3502**	**1,808.4942**	**2,419.8443**	**0.8452**	**0.1073**	**2,472.9379**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/1/2022	6/28/2022	5	20	
2	Site Preparation	Site Preparation	6/29/2022	7/12/2022	5	10	
3	Grading	Grading	7/13/2022	8/23/2022	5	30	
4	Building Construction	Building Construction	8/24/2022	10/17/2023	5	300	
5	Paving	Paving	10/18/2023	11/14/2023	5	20	
6	Architectural Coating	Architectural Coating	11/15/2023	12/12/2023	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 109,350; Residential Outdoor: 36,450; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	5.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	11.00	3.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0576	0.0000	0.0576	8.7200e-003	0.0000	8.7200e-003			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0576**	**1.2427**	**1.3002**	**8.7200e-003**	**1.1553**	**1.1640**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1800e-003	0.0415	9.1000e-003	1.6000e-004	4.3700e-003	3.9000e-004	4.7600e-003	1.2000e-003	3.7000e-004	1.5700e-003		17.2721	17.2721	5.7000e-004	2.7400e-003	18.1015
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0263	0.3878	1.1000e-003	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		112.2095	112.2095	3.0600e-003	2.8000e-003	113.1197
Total	**0.0448**	**0.0678**	**0.3969**	**1.2600e-003**	**0.1276**	**1.0300e-003**	**0.1286**	**0.0339**	**9.6000e-004**	**0.0349**		**129.4815**	**129.4815**	**3.6300e-003**	**5.5400e-003**	**131.2212**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0576	0.0000	0.0576	8.7200e-003	0.0000	8.7200e-003			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0576**	**1.2427**	**1.3002**	**8.7200e-003**	**1.1553**	**1.1640**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1800e-003	0.0415	9.1000e-003	1.6000e-004	4.3700e-003	3.9000e-004	4.7600e-003	1.2000e-003	3.7000e-004	1.5700e-003		17.2721	17.2721	5.7000e-004	2.7400e-003	18.1015
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0436	0.0263	0.3878	1.1000e-003	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		112.2095	112.2095	3.0600e-003	2.8000e-003	113.1197
Total	**0.0448**	**0.0678**	**0.3969**	**1.2600e-003**	**0.1276**	**1.0300e-003**	**0.1286**	**0.0339**	**9.6000e-004**	**0.0349**		**129.4815**	**129.4815**	**3.6300e-003**	**5.5400e-003**	**131.2212**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0524	0.0316	0.4653	1.3200e-003	0.1479	7.7000e-004	0.1486	0.0392	7.1000e-004	0.0399		134.6513	134.6513	3.6700e-003	3.3600e-003	135.7437
Total	**0.0524**	**0.0316**	**0.4653**	**1.3200e-003**	**0.1479**	**7.7000e-004**	**0.1486**	**0.0392**	**7.1000e-004**	**0.0399**		**134.6513**	**134.6513**	**3.6700e-003**	**3.3600e-003**	**135.7437**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0524	0.0316	0.4653	1.3200e-003	0.1479	7.7000e-004	0.1486	0.0392	7.1000e-004	0.0399		134.6513	134.6513	3.6700e-003	3.3600e-003	135.7437
Total	**0.0524**	**0.0316**	**0.4653**	**1.3200e-003**	**0.1479**	**7.7000e-004**	**0.1486**	**0.0392**	**7.1000e-004**	**0.0399**		**134.6513**	**134.6513**	**3.6700e-003**	**3.3600e-003**	**135.7437**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0582	0.0351	0.5170	1.4700e-003	0.1643	8.6000e-004	0.1652	0.0436	7.9000e-004	0.0444		149.6126	149.6126	4.0800e-003	3.7300e-003	150.8263
Total	**0.0582**	**0.0351**	**0.5170**	**1.4700e-003**	**0.1643**	**8.6000e-004**	**0.1652**	**0.0436**	**7.9000e-004**	**0.0444**		**149.6126**	**149.6126**	**4.0800e-003**	**3.7300e-003**	**150.8263**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0582	0.0351	0.5170	1.4700e-003	0.1643	8.6000e-004	0.1652	0.0436	7.9000e-004	0.0444		149.6126	149.6126	4.0800e-003	3.7300e-003	150.8263
Total	**0.0582**	**0.0351**	**0.5170**	**1.4700e-003**	**0.1643**	**8.6000e-004**	**0.1652**	**0.0436**	**7.9000e-004**	**0.0444**		**149.6126**	**149.6126**	**4.0800e-003**	**3.7300e-003**	**150.8263**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4700e-003	0.1618	0.0481	6.4000e-004	0.0203	1.7200e-003	0.0220	5.8500e-003	1.6500e-003	7.5000e-003		68.0958	68.0958	1.4800e-003	0.0101	71.1396
Worker	0.0320	0.0193	0.2844	8.1000e-004	0.0904	4.7000e-004	0.0908	0.0240	4.3000e-004	0.0244		82.2869	82.2869	2.2400e-003	2.0500e-003	82.9545
Total	**0.0385**	**0.1811**	**0.3324**	**1.4500e-003**	**0.1107**	**2.1900e-003**	**0.1129**	**0.0298**	**2.0800e-003**	**0.0319**		**150.3827**	**150.3827**	**3.7200e-003**	**0.0121**	**154.0941**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4700e-003	0.1618	0.0481	6.4000e-004	0.0203	1.7200e-003	0.0220	5.8500e-003	1.6500e-003	7.5000e-003		68.0958	68.0958	1.4800e-003	0.0101	71.1396
Worker	0.0320	0.0193	0.2844	8.1000e-004	0.0904	4.7000e-004	0.0908	0.0240	4.3000e-004	0.0244		82.2869	82.2869	2.2400e-003	2.0500e-003	82.9545
Total	**0.0385**	**0.1811**	**0.3324**	**1.4500e-003**	**0.1107**	**2.1900e-003**	**0.1129**	**0.0298**	**2.0800e-003**	**0.0319**		**150.3827**	**150.3827**	**3.7200e-003**	**0.0121**	**154.0941**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2600e-003	0.1287	0.0411	6.1000e-004	0.0203	7.8000e-004	0.0211	5.8500e-003	7.5000e-004	6.5900e-003		65.2383	65.2383	1.3400e-003	9.6400e-003	68.1457
Worker	0.0298	0.0171	0.2630	7.8000e-004	0.0904	4.5000e-004	0.0908	0.0240	4.1000e-004	0.0244		80.1729	80.1729	2.0200e-003	1.9000e-003	80.7903
Total	**0.0330**	**0.1458**	**0.3041**	**1.3900e-003**	**0.1107**	**1.2300e-003**	**0.1119**	**0.0298**	**1.1600e-003**	**0.0310**		**145.4113**	**145.4113**	**3.3600e-003**	**0.0115**	**148.9360**

Estates at Ross Ranch - Bay Area AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.2600e-003	0.1287	0.0411	6.1000e-004	0.0203	7.8000e-004	0.0211	5.8500e-003	7.5000e-004	6.5900e-003		65.2383	65.2383	1.3400e-003	9.6400e-003	68.1457
Worker	0.0298	0.0171	0.2630	7.8000e-004	0.0904	4.5000e-004	0.0908	0.0240	4.1000e-004	0.0244		80.1729	80.1729	2.0200e-003	1.9000e-003	80.7903
Total	**0.0330**	**0.1458**	**0.3041**	**1.3900e-003**	**0.1107**	**1.2300e-003**	**0.1119**	**0.0298**	**1.1600e-003**	**0.0310**		**145.4113**	**145.4113**	**3.3600e-003**	**0.0115**	**148.9360**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0406	0.0233	0.3586	1.0700e-003	0.1232	6.1000e-004	0.1238	0.0327	5.6000e-004	0.0333		109.3267	109.3267	2.7600e-003	2.5900e-003	110.1686
Total	**0.0406**	**0.0233**	**0.3586**	**1.0700e-003**	**0.1232**	**6.1000e-004**	**0.1238**	**0.0327**	**5.6000e-004**	**0.0333**		**109.3267**	**109.3267**	**2.7600e-003**	**2.5900e-003**	**110.1686**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0406	0.0233	0.3586	1.0700e-003	0.1232	6.1000e-004	0.1238	0.0327	5.6000e-004	0.0333		109.3267	109.3267	2.7600e-003	2.5900e-003	110.1686
Total	**0.0406**	**0.0233**	**0.3586**	**1.0700e-003**	**0.1232**	**6.1000e-004**	**0.1238**	**0.0327**	**5.6000e-004**	**0.0333**		**109.3267**	**109.3267**	**2.7600e-003**	**2.5900e-003**	**110.1686**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	38.0128					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**38.2045**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4100e-003	3.1100e-003	0.0478	1.4000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	8.0000e-005	4.4300e-003		14.5769	14.5769	3.7000e-004	3.5000e-004	14.6891
Total	**5.4100e-003**	**3.1100e-003**	**0.0478**	**1.4000e-004**	**0.0164**	**8.0000e-005**	**0.0165**	**4.3600e-003**	**8.0000e-005**	**4.4300e-003**		**14.5769**	**14.5769**	**3.7000e-004**	**3.5000e-004**	**14.6891**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	38.0128					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**38.2045**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.4100e-003	3.1100e-003	0.0478	1.4000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	8.0000e-005	4.4300e-003		14.5769	14.5769	3.7000e-004	3.5000e-004	14.6891
Total	**5.4100e-003**	**3.1100e-003**	**0.0478**	**1.4000e-004**	**0.0164**	**8.0000e-005**	**0.0165**	**4.3600e-003**	**8.0000e-005**	**4.4300e-003**		**14.5769**	**14.5769**	**3.7000e-004**	**3.5000e-004**	**14.6891**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.7297	0.6755	6.0477	0.0132	1.3913	9.3000e-003	1.4006	0.3706	8.6700e-003	0.3792		1,361.2459	1,361.2459	0.0801	0.0594	1,380.9493
Unmitigated	0.7297	0.6755	6.0477	0.0132	1.3913	9.3000e-003	1.4006	0.3706	8.6700e-003	0.3792		1,361.2459	1,361.2459	0.0801	0.0594	1,380.9493

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	283.20	286.20	256.50	646,261	646,261
Total	283.20	286.20	256.50	646,261	646,261

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.553342	0.058522	0.188738	0.121080	0.023016	0.005623	0.010412	0.007562	0.000987	0.000568	0.026444	0.000834	0.002871

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
NaturalGas Unmitigated	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2188.73	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Total		**0.0236**	**0.2017**	**0.0858**	**1.2900e-003**		**0.0163**	**0.0163**		**0.0163**	**0.0163**		**257.4976**	**257.4976**	**4.9400e-003**	**4.7200e-003**	**259.0278**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2.18873	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Total		**0.0236**	**0.2017**	**0.0858**	**1.2900e-003**		**0.0163**	**0.0163**		**0.0163**	**0.0163**		**257.4976**	**257.4976**	**4.9400e-003**	**4.7200e-003**	**259.0278**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609
Unmitigated	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609

Estates at Ross Ranch - Bay Area AQMD Air District, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	31.0895	0.5986	40.2087	0.0757		5.6857	5.6857		5.6857	5.6857	611.3502	185.2941	796.6443	0.7559	0.0431	828.3975
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**32.5278**	**0.6271**	**42.6827**	**0.0759**		**5.6994**	**5.6994**		**5.6994**	**5.6994**	**611.3502**	**189.7507**	**801.1008**	**0.7602**	**0.0431**	**832.9609**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	31.0895	0.5986	40.2087	0.0757		5.6857	5.6857		5.6857	5.6857	611.3502	185.2941	796.6443	0.7559	0.0431	828.3975
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**32.5278**	**0.6271**	**42.6827**	**0.0759**		**5.6994**	**5.6994**		**5.6994**	**5.6994**	**611.3502**	**189.7507**	**801.1008**	**0.7602**	**0.0431**	**832.9609**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Estates at Ross Ranch

Bay Area AQMD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Single Family Housing	30.00	Dwelling Unit	17.17	54,000.00	90

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	64
Climate Zone	4			**Operational Year**	2024
Utility Company					
CO2 Intensity (lb/MWhr)	0	**CH4 Intensity (lb/MWhr)**	0	**N2O Intensity (lb/MWhr)**	0

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Populaiton from DOF and acreage is from project description

Demolition -

Table Name	Column Name	Default Value	New Value
tblLandUse	LotAcreage	9.74	17.17
tblLandUse	Population	86.00	90.00

2.0 Emissions Summary

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6843	38.8868	29.5347	0.0635	19.8049	1.6358	21.4182	10.1417	1.5049	11.6260	0.0000	6,150.3916	6,150.3916	1.9488	0.0125	6,200.3927
2023	38.2100	14.5421	16.5383	0.0283	0.1232	0.7010	0.8116	0.0327	0.6596	0.6894	0.0000	2,695.0317	2,695.0317	0.7171	0.0119	2,713.8522
Maximum	**38.2100**	**38.8868**	**29.5347**	**0.0635**	**19.8049**	**1.6358**	**21.4182**	**10.1417**	**1.5049**	**11.6260**	**0.0000**	**6,150.3916**	**6,150.3916**	**1.9488**	**0.0125**	**6,200.3927**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.6843	38.8868	29.5347	0.0635	19.8049	1.6358	21.4182	10.1417	1.5049	11.6260	0.0000	6,150.3916	6,150.3916	1.9488	0.0125	6,200.3927
2023	38.2100	14.5421	16.5383	0.0283	0.1232	0.7010	0.8116	0.0327	0.6596	0.6894	0.0000	2,695.0317	2,695.0317	0.7171	0.0119	2,713.8522
Maximum	**38.2100**	**38.8868**	**29.5347**	**0.0635**	**19.8049**	**1.6358**	**21.4182**	**10.1417**	**1.5049**	**11.6260**	**0.0000**	**6,150.3916**	**6,150.3916**	**1.9488**	**0.0125**	**6,200.3927**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609
Energy	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Mobile	0.6566	0.7776	6.4833	0.0124	1.3913	9.3100e-003	1.4006	0.3706	8.6700e-003	0.3792		1,285.4184	1,285.4184	0.0910	0.0651	1,307.1048
Total	**33.2080**	**1.6064**	**49.2518**	**0.0896**	**1.3913**	**5.7250**	**7.1163**	**0.3706**	**5.7244**	**6.0950**	**611.3502**	**1,732.6667**	**2,344.0168**	**0.8561**	**0.1130**	**2,399.0935**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609
Energy	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Mobile	0.6566	0.7776	6.4833	0.0124	1.3913	9.3100e-003	1.4006	0.3706	8.6700e-003	0.3792		1,285.4184	1,285.4184	0.0910	0.0651	1,307.1048
Total	**33.2080**	**1.6064**	**49.2518**	**0.0896**	**1.3913**	**5.7250**	**7.1163**	**0.3706**	**5.7244**	**6.0950**	**611.3502**	**1,732.6667**	**2,344.0168**	**0.8561**	**0.1130**	**2,399.0935**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	6/10/2022	7/7/2022	5	20	
2	Site Preparation	Site Preparation	7/8/2022	7/21/2022	5	10	
3	Grading	Grading	7/22/2022	9/1/2022	5	30	
4	Building Construction	Building Construction	9/2/2022	10/26/2023	5	300	
5	Paving	Paving	10/27/2023	11/23/2023	5	20	
6	Architectural Coating	Architectural Coating	11/24/2023	12/21/2023	5	20	

Acres of Grading (Site Preparation Phase): 15

Acres of Grading (Grading Phase): 90

Acres of Paving: 0

Residential Indoor: 109,350; Residential Outdoor: 36,450; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Building Construction	Cranes	1	7.00	231	0.29
Demolition	Excavators	3	8.00	158	0.38
Grading	Excavators	2	8.00	158	0.38

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Grading	Graders	1	8.00	187	0.41
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	5.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	11.00	3.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0576	0.0000	0.0576	8.7200e-003	0.0000	8.7200e-003			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0576**	**1.2427**	**1.3002**	**8.7200e-003**	**1.1553**	**1.1640**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1500e-003	0.0438	9.2400e-003	1.6000e-004	4.3700e-003	3.9000e-004	4.7600e-003	1.2000e-003	3.7000e-004	1.5700e-003		17.2777	17.2777	5.7000e-004	2.7400e-003	18.1074
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0446	0.0325	0.3699	1.0200e-003	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		104.2358	104.2358	3.4600e-003	3.2200e-003	105.2827
Total	**0.0457**	**0.0763**	**0.3791**	**1.1800e-003**	**0.1276**	**1.0300e-003**	**0.1286**	**0.0339**	**9.6000e-004**	**0.0349**		**121.5135**	**121.5135**	**4.0300e-003**	**5.9600e-003**	**123.3901**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Demolition - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0576	0.0000	0.0576	8.7200e-003	0.0000	8.7200e-003			0.0000			0.0000
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**	**0.0576**	**1.2427**	**1.3002**	**8.7200e-003**	**1.1553**	**1.1640**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	1.1500e-003	0.0438	9.2400e-003	1.6000e-004	4.3700e-003	3.9000e-004	4.7600e-003	1.2000e-003	3.7000e-004	1.5700e-003		17.2777	17.2777	5.7000e-004	2.7400e-003	18.1074
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0446	0.0325	0.3699	1.0200e-003	0.1232	6.4000e-004	0.1239	0.0327	5.9000e-004	0.0333		104.2358	104.2358	3.4600e-003	3.2200e-003	105.2827
Total	**0.0457**	**0.0763**	**0.3791**	**1.1800e-003**	**0.1276**	**1.0300e-003**	**0.1286**	**0.0339**	**9.6000e-004**	**0.0349**		**121.5135**	**121.5135**	**4.0300e-003**	**5.9600e-003**	**123.3901**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0535	0.0390	0.4438	1.2300e-003	0.1479	7.7000e-004	0.1486	0.0392	7.1000e-004	0.0399		125.0830	125.0830	4.1600e-003	3.8700e-003	126.3392
Total	**0.0535**	**0.0390**	**0.4438**	**1.2300e-003**	**0.1479**	**7.7000e-004**	**0.1486**	**0.0392**	**7.1000e-004**	**0.0399**		**125.0830**	**125.0830**	**4.1600e-003**	**3.8700e-003**	**126.3392**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					19.6570	0.0000	19.6570	10.1025	0.0000	10.1025			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**19.6570**	**1.6126**	**21.2696**	**10.1025**	**1.4836**	**11.5860**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0535	0.0390	0.4438	1.2300e-003	0.1479	7.7000e-004	0.1486	0.0392	7.1000e-004	0.0399		125.0830	125.0830	4.1600e-003	3.8700e-003	126.3392
Total	**0.0535**	**0.0390**	**0.4438**	**1.2300e-003**	**0.1479**	**7.7000e-004**	**0.1486**	**0.0392**	**7.1000e-004**	**0.0399**		**125.0830**	**125.0830**	**4.1600e-003**	**3.8700e-003**	**126.3392**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0594	0.0433	0.4932	1.3700e-003	0.1643	8.6000e-004	0.1652	0.0436	7.9000e-004	0.0444		138.9811	138.9811	4.6200e-003	4.3000e-003	140.3769
Total	**0.0594**	**0.0433**	**0.4932**	**1.3700e-003**	**0.1643**	**8.6000e-004**	**0.1652**	**0.0436**	**7.9000e-004**	**0.0444**		**138.9811**	**138.9811**	**4.6200e-003**	**4.3000e-003**	**140.3769**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.2036	0.0000	9.2036	3.6538	0.0000	3.6538			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**9.2036**	**1.6349**	**10.8385**	**3.6538**	**1.5041**	**5.1579**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0594	0.0433	0.4932	1.3700e-003	0.1643	8.6000e-004	0.1652	0.0436	7.9000e-004	0.0444		138.9811	138.9811	4.6200e-003	4.3000e-003	140.3769
Total	**0.0594**	**0.0433**	**0.4932**	**1.3700e-003**	**0.1643**	**8.6000e-004**	**0.1652**	**0.0436**	**7.9000e-004**	**0.0444**		**138.9811**	**138.9811**	**4.6200e-003**	**4.3000e-003**	**140.3769**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4000e-003	0.1707	0.0497	6.4000e-004	0.0203	1.7300e-003	0.0221	5.8500e-003	1.6500e-003	7.5000e-003		68.1233	68.1233	1.4800e-003	0.0101	71.1716
Worker	0.0327	0.0238	0.2712	7.5000e-004	0.0904	4.7000e-004	0.0908	0.0240	4.3000e-004	0.0244		76.4396	76.4396	2.5400e-003	2.3600e-003	77.2073
Total	**0.0391**	**0.1945**	**0.3210**	**1.3900e-003**	**0.1107**	**2.2000e-003**	**0.1129**	**0.0298**	**2.0800e-003**	**0.0319**		**144.5629**	**144.5629**	**4.0200e-003**	**0.0125**	**148.3789**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.4000e-003	0.1707	0.0497	6.4000e-004	0.0203	1.7300e-003	0.0221	5.8500e-003	1.6500e-003	7.5000e-003		68.1233	68.1233	1.4800e-003	0.0101	71.1716
Worker	0.0327	0.0238	0.2712	7.5000e-004	0.0904	4.7000e-004	0.0908	0.0240	4.3000e-004	0.0244		76.4396	76.4396	2.5400e-003	2.3600e-003	77.2073
Total	**0.0391**	**0.1945**	**0.3210**	**1.3900e-003**	**0.1107**	**2.2000e-003**	**0.1129**	**0.0298**	**2.0800e-003**	**0.0319**		**144.5629**	**144.5629**	**4.0200e-003**	**0.0125**	**148.3789**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1500e-003	0.1362	0.0425	6.1000e-004	0.0203	7.8000e-004	0.0211	5.8500e-003	7.5000e-004	6.6000e-003		65.3316	65.3316	1.3300e-003	9.6700e-003	68.2461
Worker	0.0305	0.0211	0.2519	7.3000e-004	0.0904	4.5000e-004	0.0908	0.0240	4.1000e-004	0.0244		74.4901	74.4901	2.3000e-003	2.1900e-003	75.2000
Total	**0.0337**	**0.1573**	**0.2943**	**1.3400e-003**	**0.1107**	**1.2300e-003**	**0.1119**	**0.0298**	**1.1600e-003**	**0.0310**		**139.8218**	**139.8218**	**3.6300e-003**	**0.0119**	**143.4461**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.5 Building Construction - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.1500e-003	0.1362	0.0425	6.1000e-004	0.0203	7.8000e-004	0.0211	5.8500e-003	7.5000e-004	6.6000e-003		65.3316	65.3316	1.3300e-003	9.6700e-003	68.2461
Worker	0.0305	0.0211	0.2519	7.3000e-004	0.0904	4.5000e-004	0.0908	0.0240	4.1000e-004	0.0244		74.4901	74.4901	2.3000e-003	2.1900e-003	75.2000
Total	**0.0337**	**0.1573**	**0.2943**	**1.3400e-003**	**0.1107**	**1.2300e-003**	**0.1119**	**0.0298**	**1.1600e-003**	**0.0310**		**139.8218**	**139.8218**	**3.6300e-003**	**0.0119**	**143.4461**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0416	0.0288	0.3434	9.9000e-004	0.1232	6.1000e-004	0.1238	0.0327	5.6000e-004	0.0333		101.5775	101.5775	3.1300e-003	2.9900e-003	102.5455
Total	**0.0416**	**0.0288**	**0.3434**	**9.9000e-004**	**0.1232**	**6.1000e-004**	**0.1238**	**0.0327**	**5.6000e-004**	**0.0333**		**101.5775**	**101.5775**	**3.1300e-003**	**2.9900e-003**	**102.5455**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.6 Paving - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**1.0327**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0416	0.0288	0.3434	9.9000e-004	0.1232	6.1000e-004	0.1238	0.0327	5.6000e-004	0.0333		101.5775	101.5775	3.1300e-003	2.9900e-003	102.5455
Total	**0.0416**	**0.0288**	**0.3434**	**9.9000e-004**	**0.1232**	**6.1000e-004**	**0.1238**	**0.0327**	**5.6000e-004**	**0.0333**		**101.5775**	**101.5775**	**3.1300e-003**	**2.9900e-003**	**102.5455**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	38.0128					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**38.2045**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5500e-003	3.8300e-003	0.0458	1.3000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	8.0000e-005	4.4300e-003		13.5437	13.5437	4.2000e-004	4.0000e-004	13.6727
Total	**5.5500e-003**	**3.8300e-003**	**0.0458**	**1.3000e-004**	**0.0164**	**8.0000e-005**	**0.0165**	**4.3600e-003**	**8.0000e-005**	**4.4300e-003**		**13.5437**	**13.5437**	**4.2000e-004**	**4.0000e-004**	**13.6727**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.7 Architectural Coating - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	38.0128					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**38.2045**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.5500e-003	3.8300e-003	0.0458	1.3000e-004	0.0164	8.0000e-005	0.0165	4.3600e-003	8.0000e-005	4.4300e-003		13.5437	13.5437	4.2000e-004	4.0000e-004	13.6727
Total	**5.5500e-003**	**3.8300e-003**	**0.0458**	**1.3000e-004**	**0.0164**	**8.0000e-005**	**0.0165**	**4.3600e-003**	**8.0000e-005**	**4.4300e-003**		**13.5437**	**13.5437**	**4.2000e-004**	**4.0000e-004**	**13.6727**

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.6566	0.7776	6.4833	0.0124	1.3913	9.3100e-003	1.4006	0.3706	8.6700e-003	0.3792		1,285.4184	1,285.4184	0.0910	0.0651	1,307.1048
Unmitigated	0.6566	0.7776	6.4833	0.0124	1.3913	9.3100e-003	1.4006	0.3706	8.6700e-003	0.3792		1,285.4184	1,285.4184	0.0910	0.0651	1,307.1048

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Single Family Housing	283.20	286.20	256.50	646,261	646,261
Total	283.20	286.20	256.50	646,261	646,261

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Single Family Housing	10.80	4.80	5.70	31.00	15.00	54.00	86	11	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Single Family Housing	0.553342	0.058522	0.188738	0.121080	0.023016	0.005623	0.010412	0.007562	0.000987	0.000568	0.026444	0.000834	0.002871

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
NaturalGas Unmitigated	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2188.73	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Total		**0.0236**	**0.2017**	**0.0858**	**1.2900e-003**		**0.0163**	**0.0163**		**0.0163**	**0.0163**		**257.4976**	**257.4976**	**4.9400e-003**	**4.7200e-003**	**259.0278**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Single Family Housing	2.18873	0.0236	0.2017	0.0858	1.2900e-003		0.0163	0.0163		0.0163	0.0163		257.4976	257.4976	4.9400e-003	4.7200e-003	259.0278
Total		**0.0236**	**0.2017**	**0.0858**	**1.2900e-003**		**0.0163**	**0.0163**		**0.0163**	**0.0163**		**257.4976**	**257.4976**	**4.9400e-003**	**4.7200e-003**	**259.0278**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609
Unmitigated	32.5278	0.6271	42.6827	0.0759		5.6994	5.6994		5.6994	5.6994	611.3502	189.7507	801.1008	0.7602	0.0431	832.9609

Estates at Ross Ranch - Bay Area AQMD Air District, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	31.0895	0.5986	40.2087	0.0757		5.6857	5.6857		5.6857	5.6857	611.3502	185.2941	796.6443	0.7559	0.0431	828.3975
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**32.5278**	**0.6271**	**42.6827**	**0.0759**		**5.6994**	**5.6994**		**5.6994**	**5.6994**	**611.3502**	**189.7507**	**801.1008**	**0.7602**	**0.0431**	**832.9609**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2083					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.1556					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	31.0895	0.5986	40.2087	0.0757		5.6857	5.6857		5.6857	5.6857	611.3502	185.2941	796.6443	0.7559	0.0431	828.3975
Landscaping	0.0744	0.0285	2.4740	1.3000e-004		0.0137	0.0137		0.0137	0.0137		4.4566	4.4566	4.2800e-003		4.5635
Total	**32.5278**	**0.6271**	**42.6827**	**0.0759**		**5.6994**	**5.6994**		**5.6994**	**5.6994**	**611.3502**	**189.7507**	**801.1008**	**0.7602**	**0.0431**	**832.9609**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix B

Soil Investigation Report

REESE CONSULTING GEOTECHNICAL & ASSOCIATES ENGINEERS

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Report
Soil Investigation
Jensen Lane Subdivision
1295 Jensen Lane
Windsor, California

Prepared for
Synergy Communities
435 E Street
Santa Rosa, CA 95404
Attention: Andy Christopherson

By

REESE & ASSOCIATES
Consulting Geotechnical Engineers



Jonathan D. Morris
Geotechnical Engineer No. 2911



Jeffrey K. Reese
Civil Engineer No. 47753

Job No. 1352.2.1
November 20, 2018

INTRODUCTION

This report presents the results of our soil investigation for the proposed Jenson Lane residential development to be located in Windsor, California. The approximate 17-acre site is located at 1295 Jenson Lane and is identified as Assessor's Parcel Number 162-020-004.

The proposed development will consist of subdividing the property into about 21 to 25 parcels for single-family residential construction. We understand that the proposed residences would be one- and/or two-story, wood-frame structures with post-tensioned, concrete slab-on-grade floors. The project will include about one-quarter mile of asphalt-paved public roadway and be serviced by underground utilities. The property is gently to moderately sloping and we anticipate the project could include retaining walls. Site grading plans were not available at the time of this report. However, based on the site topographic map provided, the subdivision layout plan, and our experience with similar projects in the area, we anticipate site grading will generally consist of cuts and fills up to about 4 to 6 feet to create level building areas.

The object of our investigation, as outlined in our proposal dated January 30, 2018, was to review selected, geologic references in our files, explore subsurface conditions, measure depth to groundwater, if encountered, and determine physical properties of the soils encountered. We then performed engineering analyses to develop conclusions and recommendations concerning:

1. Proximity of the site to active faults.
2. Site preparation and grading.
3. Foundation support and design criteria.

4. Support of concrete slab-on-grade floors.

5. Retaining wall design criteria.

6. The results of two laboratory stabilometer (R-value) tests for pavement thickness determination by others.

7. Quality and compaction criteria for development of asphalt-paved roadways.

8. Soil engineering drainage.

9. Supplemental soil engineering services.

WORK PERFORMED

We reviewed selected, published, geologic information in our files including:

1. The "Geology for Planning in Sonoma County" maps, Special Report 120, California Division of Mines and Geology, 1980.

2. The "Maps of Known Active Fault Near-Source Zones in California and Adjacent Portions of Nevada," Uniform Building Code (UBC), 1997.

3. The Healdsburg Quadrangle Sheet of the Alquist-Priolo Special Studies Zone maps, California Division of Mines and Geology, 1983.

4. Google Earth, (http://earth.google.com); includes historical aerial photos from 1993 to 2017.

On May 30 and 31, 2018, we observed surface features and explored subsurface conditions to the extent of eight test borings at the approximate locations indicated on Plate 1. The test borings were drilled to depths between 8 and 15 feet with track-mounted, auger equipment. Our representative located the borings, observed the drilling, logged the conditions

encountered and obtained samples for visual classification and laboratory testing. Relatively undisturbed samples were obtained with a 2.5-inch (inside-diameter), split-spoon sampler driven with a 140-pound drop hammer. The stroke during driving was about 30 inches. The blows required to drive the sampler were recorded and converted to equivalent Standard Penetration blow counts for correlation with empirical data. Logs of the test borings showing soil classifications, sample depths and converted blow counts are presented on Plates 2 through 9. The soils are classified in accordance with the Unified Soil Classification System explained on Plate 11.

On June 4, 2018, we returned to the site and further explored the subsurface conditions by excavating 4 test pits at the approximate locations indicated on Plate 1. The pits were excavated to depths between 3 and 6 feet with a track-mounted excavator. Our representative located the pits, observed the excavations, logged the conditions encountered and obtained a few samples for minor laboratory classification testing. In addition, we performed strength indicator tests in the walls of the pits with a penetrometer. Logs of the pits showing soil conditions encountered are presented on Plate 10.

Selected samples were tested in our laboratory to determine moisture content, dry density, classification (percent free swell, Atterberg Limits and percent passing the No. 200 sieve) and strength characteristics. The laboratory results for samples obtained from the test pits and penetrometer data are summarized on Plate 12. Test results for samples obtained from the test borings are shown on the test boring logs with the strength data shown in the manner described

by the Key to Test Data, Plate 11. Detailed results of the Atterberg Limits tests are presented on Plate 13.

Bulk samples of the near-surface soils were obtained for laboratory stabilometer (R-value) testing. Detailed results of the R-value tests are presented on Plates 14 and 15.

The test boring and pit locations shown on Plate 1 were determined by visually estimating from existing surface features. The locations should be considered no more accurate than implied by the methods used to establish the data. At completion of exploration, the boreholes were backfilled with the soil cuttings and the test pits were backfilled with the excavated soil.

SURFACE AND SUBSURFACE CONDITIONS

The rectangular property measures about 1,300 feet from north to south and is about 560 feet wide. The property is accessed by proceeding east on Jensen Lane from Hembree Lane. The property is bounded by Vinecrest Road to the north, vineyards to the south, open fields and two single-family residences to the east, and single-family residences to the west. The property is generally planar with about 35 feet of vertical relief from the northeast corner to the southwest corner. However, a 20-foot tall ridge extends through the property from east to west just south of the middle of the property. Based on the topographic map provided, side slopes on the ridge are inclined at about eight horizontal to one vertical (8:1) to 10:1. Three, generally broad and shallow, drainage courses were observed to extend west and southwest through the northern half of the property. The southern-most drainage is well-defined, about 1 to 2 feet deep, and 2 to 4 feet wide. Areas of perched surface water were observed around the southern drainage near the

west property line and near the southwest corner of the property at the time of our surface reconnaissance in April of 2018. The property is generally undeveloped. However, a residence, barn, and several outbuildings are present on the ridge and a block of dilapidated vines or trees is present at the southeast corner of the property.

The borings and laboratory tests indicate that the site is generally blanketed by topsoil underlain by a discontinuous sandy clay layer and firm sediments of the Glen Ellen Formation. The topsoil consisted mainly of sandy silt and was observed to vary from soft to very stiff and dry to wet. The topsoil extends to depths between about 2 and 4 feet below the ground surface and was observed to be porous to about 1½ to 2½ feet. The sandy clay layer is about 1 to 2 feet thick and was observed to be very stiff to hard and moist to wet. Laboratory testing indicates that the sandy clay is of moderate to high expansion potential. That is, the clay would tend to undergo moderate to high strength and volume changes because of seasonal changes in moisture content. Below about 3 to 5 feet, firm sediments of the Glen Ellen Formation were encountered. The sediments consisted of mixtures of sand, silt, clay, and gravel that were observed to be stiff to hard and medium dense to very dense. However, at the southwest part of the site the sediments were observed to be less firm at depth relative to the rest of the site. Also, expansive clay was encountered at a depth of 6 feet in Test Boring 7, located in the west-southwest part of the site, and extended to the termination depth of 12 feet.

Groundwater was not encountered in any of the test pits or borings during our exploration. However, we believe that groundwater conditions and seepage levels can vary seasonally and could rise and fall several feet annually.

CONCLUSIONS

Based on the results of our field exploration, laboratory tests and engineering analyses, we conclude that from a soil engineering standpoint, the site can be used for the proposed residential construction. The most significant geotechnical engineering factors that must be considered in design and construction are the presence of weak, compressible upper soils and clayey materials of moderate to high expansion potential in localized areas.

Weak, compressible upper soils, such as those encountered at the site, can undergo considerable strength loss and settlement when saturated under load. Where evaporation is inhibited by footings, slabs, or fills, eventual saturation of the underlying soils can occur. Therefore, we conclude that the weak, upper, porous soils are not suitable for foundation support in their present condition.

Expansive soils can shrink and swell with seasonal changes in moisture content and can heave lightly loaded conventional foundations and slabs. The risk of future distress to structures resulting from shrinking and swelling of the expansive clays can be considerably reduced by initially moisture conditioning the soils to cause preswelling and utilizing foundation systems designed to tolerate expansive soil movements.

We understand that you desire to use a post-tensioned slab-on-grade foundation system with perimeter and possibly interior stiffening beams to support the residences. We conclude that post-tensioned slab-on-grade foundations can be used for support of the residences, as proposed. Because of the presence of weak compressible upper soils, locally occurring expansive soils and relatively shallow bedrock, we judge that post-tensioned slab-on-grade foundations would need to be designed to tolerate the potential for differential soil movements. To help provide more uniform supporting conditions and reduce potential foundation heave and/or settlement, we judge that it will be necessary to underlie post-tensioned slabs-on-grade with properly compacted fill, as subsequently recommended. In addition, buildings supported on compacted fill that varies significantly in thickness and on pads that transition from cut to fill can be subject to differential settlement and resultant distress. To reduce the risk of intolerable differential settlement, differential fill thickness under a building would need to be limited to 6 feet or less.

The test pits were backfilled with the excavated materials, but the soils were not compacted. Therefore, the pit backfills constitute local zones of material subject to settlement and/or erosion. Where encountered in planned improvement areas, compressible pit backfills would need to be removed for their entire depth and replaced as properly compacted fill or foundation elements deepened accordingly.

SEISMIC DESIGN PARAMETERS

The geologic maps reviewed did not indicate the presence of active faults at the site, and the site is not located within a presently designated Alquist-Priolo Earthquake Fault Zone. Therefore, we judge that there is little risk of fault-related ground rupture during earthquakes. In a seismically active region such as Northern California, there is always some possibility for future faulting at any site. However, historical occurrences of surface faulting have generally closely followed the trace of the more recently active faults.

The closest faults generally considered active are the Rodgers Creek fault zone located approximately 1½ miles to the southeast, the Maacama (southern extension) fault zone located approximately 5 miles to the northeast, and the San Andreas fault zone located approximately 20 miles to the southwest.

Very strong ground shaking could occur during earthquakes. The intensity at the site will depend on the distance to the earthquake epicenter, depth and magnitude of the shock and the response characteristics of the materials beneath the site. Because of the proximity of active faults in the region and the potential for very strong ground shaking, it will be necessary to design and construct the project in strict accordance with current standards for earthquake-resistant construction.

We have determined seismic ground motion values in accordance with procedures outlined in Section 1613 of the 2016 California Building Code (CBC). Mapped acceleration parameters (S_S and S_1) were obtained by inputting approximate site coordinates (latitude and

longitude) into earthquake ground motion software developed by the United States Geological Survey. Based on our review of available geologic maps and our knowledge of the subsurface conditions, we judge that the site can be classified as Site Class C, as described in Table 20.3-1 of the American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI) Standard ASCE/SEI 7-10. Using corresponding values of site coefficients for Site Class C, and the procedures outlined in the CBC, the mapped acceleration parameters were adjusted to yield the design spectral response acceleration parameters S_{DS} and S_{D1}. The following earthquake design data summarize the results of the procedures outlined above.

2016 CBC Ground Motion Parameters

Site Class	C
Mapped Spectral Response Accelerations:	
S_S	2.367 g
S_1	0.984 g
Design Spectral Response Accelerations:	
S_{DS}	1.578 g
S_{D1}	0.853 g

RECOMMENDATIONS

Site Grading

The site should be cleared of debris and brush, where encountered. Designated trees should be removed, and the root systems excavated. Designated structures, old foundations and slabs should be completely removed. The resultant voids should be backfilled with compacted

soil, as subsequently recommended. Dense growths of grass and vegetation should be removed. The surface then should be stripped of upper soils containing root growth and organic matter. We anticipate that the depth of stripping needed will average about 3 inches. The strippings should be removed from the site, stockpiled for reuse as topsoil, or mixed with at least five parts of soil and used as fill at least 10 feet away from structures, walkways, or paved areas.

Wells, septic tanks, leach fields and other voids encountered or created should be removed, filled with compacted soil or compacted granular material, or capped with concrete, as determined by the appropriate regulatory agency or the soil engineer.

After stripping, excavation can be performed as necessary. Areas 6:1 or steeper planned to received fill, if any, should be prepared by cutting level keyways extending into firm soil. Keyway excavations should extend at least 1 foot into firm soil or bedrock on the downhill side of the keyway excavation, as determined in the field by the soil engineer. Keyway depths are anticipated to be 3 to 5 feet below the grade exposed by stripping but could be deeper if deeper deposits of weak upper soil are encountered, as determined in the field by the soil engineer. Subsurface drainage facilities could need to be installed at the rear of keyways, as determined in the field by the soil engineer. Typical hillside grading and subdrain details are shown on Plate 16.

Existing fills, if encountered, within building areas should be removed for their full depth. Within planned building areas and extending to at least 5 and 3 feet beyond the building perimeter and adjacent concrete walkways, respectively, excavations should be performed so as

to provide space for at least 12 inches of properly compacted fill below planned finished pad grade elevation. We anticipate that, with the exception of organic matter and rocks or hard fragments larger than 4 inches in diameter, the on-site excavated materials will be suitable for reuse as compacted fill.

The surfaces exposed by stripping and/or excavation should be scarified at least 6 inches deep, moisture conditioned to near optimum (at least 4 percentage points above optimum for on-site clayey soils and so as to close any shrinkage cracks for their full depth) and compacted to at least 87 percent relative compaction.[1] Approved, excavated and/or imported fill should then be placed in 8-inch thick loose layers, similarly moisture conditioned and compacted to at least 90 percent.

For grading performed in the rainy season (late fall, winter, or spring), there is a risk that the site can become too wet and soft to support construction equipment, normally suitable on-site or imported fill can become too wet to compact (requiring more expensive rocky fill), excavation bottoms can become unstable requiring overexcavation and/or use of geotextile fabrics or placement of granular working pads, and procedures to reduce the possibility of tracking mud onto adjacent public streets would be required. Accordingly, we suggest that the contract documents contain provisions to account for such possible additional costs.

1 Relative compaction refers to the in-place dry density of fill expressed as a percentage of maximum dry density of the same material determined in accordance with the American Society for Testing and Materials (ASTM) Standard ASTM D1557 laboratory compaction test procedure. Optimum moisture content refers to the moisture content at maximum dry density.

Imported fill, if needed, should be of low expansion potential and have a Plasticity Index of 15 or less, and be free of organic matter and rocks or hard fragments larger than 4 inches in diameter. Material proposed for use as imported fill should be tested and approved by the soil engineer prior to delivery to the site.

Finished cut and fill slopes should be trimmed to expose firm material and should be no steeper than 2:1. Slopes over 3 feet high should be planted with fast-growing, deep-rooted ground cover to reduce erosion.

Foundation Support

Provided the site is graded as outlined above, post-tensioned slabs should be underlain by at least 12 inches of properly compacted fill. We recommend that the post-tensioned slabs be designed in accordance with the Post-Tensioning Institute's design manual for Design and Construction of Post-Tensioned Slabs-on-Ground, current edition, or the criteria in the California Building Code, latest adopted edition. Based on our field and laboratory data, we believe that the following average soil properties could be assumed for design:

E_m = 7.0 feet (center lift)	Y_m = 1.5-inch (center lift)
E_m = 4.0 feet (edge lift)	Y_m = 1.0-inch (edge lift)

For design, an allowable bearing pressure of 1,000 pounds per square foot (psf) and a friction factor of 0.30 can be used. Waffle mat post-tensioned slabs, if used, can be designed using an average allowable bearing pressure of 1,500 psf on the base of the ribs.

The slabs should be underlain with a capillary moisture break and cushion layer consisting of at least 4 inches of free-draining gravel or crushed rock (slab rock). The gravel or crushed rock should be at least 1/4-inch and no larger than 3/4-inch in size. Moisture vapor will condense on the underside of slabs. Accordingly, where migration of moisture vapor through slabs is detrimental, a 10-mil (minimum) vapor retarder should be provided beneath the slabs. Two inches of moist, clean sand could be placed on top of the membrane to aid in curing and to help provide puncture protection. However, the actual use of sand should be determined by the architect or design engineer. The use of a less permeable and stronger membrane should be considered if sand is not to be placed for puncture protection, or where the flooring manufacturer requires a vapor barrier. If sand is not placed on top of the vapor retarder, concrete design and curing specifications should recognize the potential adverse effects associated with placement of concrete directly on the vapor retarder. The thickened edges of the slab foundation should penetrate through the slab rock and sand, if used, and bottom in compacted pad soils to act as a moisture barrier. From a geotechnical engineering standpoint, the slab rock can be omitted if the slab is designed as a waffle mat.

The compacted pad soils should be firm, uniform, and maintained in a moist condition until concrete placement. If the pad is allowed to dry, remoistening prior to construction could be needed. We should be notified to observe the building pads prior to covering with the vapor barrier or slab rock to verify that the pad is firm, uniform, and moist.

Retaining Walls

Retaining walls that are free to rotate slightly and support level (and up to 3:1) backfill should be designed to resist an active equivalent fluid pressure of 40 pounds per cubic foot (pcf) acting in a triangular pressure distribution. Where the backfill slope is steeper than 3:1, the pressure should be increased to 55 pcf. If the wall is constrained at the top and cannot tilt, the design pressures for level and sloping backfill should be increased to 55 and 70 pcf, respectively. Where retaining wall backfill is subject to vehicular traffic, the walls should be designed to resist an added surcharge pressure equivalent to 1½ feet of additional backfill.

Spread footing foundations can be used for support of site retaining walls. Footings should be at least 12 inches deep and bottom on firm natural soil, bedrock or properly compacted fill. Footing excavations that expose weak compressible or expansive soils would need to be deepened, as determined in the field by the soil engineer. Footings can be designed to impose dead plus code live load and total design load (including wind or seismic forces) bearing pressures of 2,000 and 3,000 psf, respectively.

Resistance to lateral loads can be obtained from passive earth pressures and soil friction. We recommend the following criteria for design:

Passive Earth Pressure	=	300 pcf equivalent fluid, neglect the upper 1 foot unless confined by pavement or slabs
Soil Friction Factor	=	0.30

The bottom of footing excavations should be no steeper than 10:1, and should be stepped as needed to provide a relatively level bottom. Footings excavated on slopes should extend to a depth that provides at least 7 feet of horizontal confinement, as measured from the outside bottom edge of the footing and the face of the slope.

As outlined in the 2016 CBC, it could be necessary to design retaining walls to resist additional lateral soil loads imposed during seismic shaking. Accordingly, based on the Mononobe-Okabe Method, we have computed the following dynamic component of total thrust induced on the wall for varying backslope inclinations.

Backslope Inclination (β)	Dynamic Component* of Total Thrust (lbs/ft)
$0 \leq \beta \leq 8{:}1$	$18H^2$
$8{:}1 < \beta \leq 6{:}1$	$21H^2$
$6{:}1 < \beta \leq 4{:}1$	$38H^2$

* The dynamic component of total thrust should be applied as a line load at a height of 0.6H above the base of the retaining wall; where H is height of the retaining wall.

Retaining walls should be fully backdrained. The backdrains should consist of 4-inch-diameter, perforated rigid-wall pipe sloped to drain to outlets by gravity and free-draining, crushed rock or gravel. The crushed rock or gravel should extend to within 1 foot of the surface. The drainrock should conform to the quality requirements for Class 2 Permeable Materials per Caltrans Standard Specifications. As an alternative, any clean drainrock could be used if the rock is covered and separated from the soil bank by a nonwoven, geotextile fabric, such as Mirafi 140N or equivalent, weighing at least four ounces per square yard. The upper 1 foot should be backfilled with compacted soil to exclude surface water infiltration.

The ground surface behind retaining walls should be sloped to drain. Where migration of moisture through retaining walls would be detrimental, the walls should be waterproofed.

Pavements

For planning purposes, we anticipate that streets in the subdivision will be constructed of asphalt concrete placed over aggregate base materials. The flexible pavement materials and methods used should conform to the quality requirements of the State of California, Caltrans Standard Specifications, current edition, and the requirements of the Town of Windsor.

The results of the laboratory stabilometer tests from bulk samples obtained at approximate depths of 1 to 2 feet below the existing ground surface indicate R-values of 4 and 35. However, because of variability of soil conditions at planned subgrade level we recommend an R-value of 5 be used for determination of the pavement section within the public right-of-way. We can provide additional R-value tests during rough grading once the roadway subgrade has been rough graded, if requested.

Prior to subgrade preparation, underground utilities in the paved areas should be installed and properly backfilled. Pavement subgrades should be prepared by scarifying to a depth of at least 6 inches, moisture conditioning to slightly above optimum (at least 2 percent above optimum for on-site clayey soils) and compacting to at least 95 percent relative compaction. Finished subgrade should be smooth and nonyielding. Aggregate base material should be spread in layers, moisture conditioned and compacted to at least 95 percent relative compaction. The aggregate base material should also be firm and nonyielding.

Geotechnical Drainage

Ponding water will cause softening and possibly swelling of site soils and could be detrimental to foundations. It is important that the finished ground surface be sloped to drain away from foundations. A positive gradient of at least 1/2 inch per foot extending at least 4 feet out should be provided away from all residences. The roofs should be provided with gutters, and the downspouts should discharge onto paved areas or splash blocks draining at least 30 inches away from foundations or be connected to nonperforated rigid plastic pipelines that discharge into planned or existing drainage facilities.

To provide an outlet for water that could accumulate in the underslab rock and reduce the risk of future moisture migration up through the floor slab, installation of an underslab subdrain system beneath interior floor slabs should be considered. The underslab subdrain system should consist of a system of perforated pipes designed so as to drain each bay created by interior and/or perimeter foundations. The underslab subdrain system should be connected to a nonperforated outlet pipe that extends through or beneath the perimeter foundation to a suitable discharge point. A typical cross-section of our recommended underslab subdrain is shown on Plate 17. We can provide additional consultation concerning the configuration and location of the underslab subdrain system during final design, once foundation plans have been prepared.

Roof downspouts and surface drains must be maintained entirely separate from underslab subdrains and retaining wall backdrains. Property owner and/or professional landscaping should maintain good positive flow of surface water away from and around the residences. It should be

recognized that fences, walks, patio slabs, lawns, planters, etc., can impede water flow and promote surface soil saturation and seepage under post-tensioned slabs.

Supplemental Geotechnical Services

We should review final grading and foundation plans for conformance with the intent of our recommendations. During site grading operations, we should provide intermittent observation and testing to determine the conditions encountered and to modify our recommendations, if warranted. Field and laboratory tests should be performed to ascertain that the indicated moisture content and degree of compaction are being attained.

The soil engineer should observe floor slab areas prior to placement of underslab sand and/or rock to verify that suitably moisture conditioned and adequate bearing materials are encountered and to modify our recommendations, if warranted. Concrete placement and reinforcing should be checked as stipulated on the project plans or as required by the Building Department. It is our understanding that approval from the Building Department must be obtained prior to the placement of concrete in foundation elements.

LIMITATIONS

We have performed the investigation and prepared this report in accordance with generally accepted standards of the soil engineering profession. No other warranty, neither express nor implied, is given. It should be understood that our services were limited to the scope of work outlined above and specifically excluded other services including, but not limited to, an

evaluation or analysis of soil chemistry, corrosion potential, mold and soil/groundwater contamination.

Subsurface conditions are complex and may differ from those indicated by surface features or encountered at test boring and test pit locations. Therefore, variations in subsurface conditions not indicated on the logs could be encountered. If the project is revised, or if conditions different from those described in this report are encountered during construction, we should be notified immediately so that we can take timely action to modify our recommendations, if warranted.

Supplemental services as recommended herein are performed on an as-requested basis. We can accept no responsibility for items we are not notified to check, nor for use or interpretation by others of the information contained herein. Such services are in addition to this soil investigation and are charged for on an hourly basis in accordance with our Standard Schedule of Charges.

Site conditions and standards of practice change. Therefore, we should be notified to update this report if construction is not performed within 24 months.

LIST OF PLATES

Plate 1	Test Boring/Pit Location Plan and Site Vicinity Map
Plates 2 through 9	Logs of Test Borings 1 through 8
Plate 10	Log of Test Pits 1 through 4
Plate 11	Soil Classification Chart and Key to Test Data
Plate 12	Laboratory Test Data
Plate 13	Plasticity Index Test Results
Plates 14 and 15	R-Value Test Results
Plate 16	Typical Cross-Section Recommended Hillside Grading
Plate 17	Typical Cross-Section Underslab Subdrain

DISTRIBUTION

Copies submitted: 5

Synergy Communities
435 E Street
Santa Rosa, CA 95404
Attention: Kent Byers
kent@byersre.com

JDM/JKR:nay/ra/Job No. 1352.2.1

LOG OF BORING 1

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-30-18

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
				0		GRAY-BROWN SANDY CLAY (CL), stiff, moist, porous to 1.8 feet
LL = 27, PL = 20. PI = 7 Percent Free Swell = 20	16			2		
						SILTY SAND (SM), medium dense, moist to wet
TxUU = 2490 (1000)	27	13.7	107			YELLOW-BROWN GRAVELLY CLAY (CL), stiff to very stiff, moist to wet
				4		
UC(P) = 2750	50	19.3	100			LIGHT BROWN VERY SANDY CLAY (CL), stiff to very stiff, moist to wet
				6		
				8		LIGHT BROWN CLAYEY GRAVEL (GC), medium dense to dense, moist to wet
	40	15.2	110			
				10		
						with zones of clayey sand and sandy clay
				12		
				14		
	27					
						(No free water encountered)

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1

Date: 10-12-18

Appr: JDM

LOG OF BORING 1

JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **2**

*Converted to Standard Penetration Blow Counts

LOG OF BORING 2

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-30-18

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
				0		GRAY-BROWN SILTY SAND (SM), medium dense, moist, with occasional roots
Percent Free Swell = 25	20					
				2		LIGHT BROWN CLAYEY SAND (SC), medium dense, moist to wet, with occasional gravel and fine roots, porous to 2.7 feet
TxUU = 1880 (500)	19	13.6	105			
				4		
UC(P) = 3250 Percent Passing No. 200 Sieve = 33.0	20	13.4	107			
				6		
						BROWN SANDY CLAY (CL), stiff to hard, wet, with occasional subrounded gravel
	32	13.6	111	8		
				10		
						LIGHT BROWN VERY CLAYEY SAND (SC), medium dense, wet, with occasional fine gravel
				12		
Percent Passing No. 200 Sieve = 35.7	27	19.0	108			
						(No free water encountered)

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1

Date: 10-12-18

Appr: JDM

LOG OF BORING 2

JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **3**

*Converted to Standard Penetration Blow Counts

LOG OF BORING 3

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-30-18

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
				0		BROWN SANDY SILT (ML), soft, dry, porous
UC(P) = 1750 LL = 50, PL = 24, PI = 26 Percent Free Swell = 90	18	18.8	102	2		DARK BROWN SANDY CLAY (CH), medium stiff to stiff, very moist to wet, plastic
						LIGHT BROWN SANDY CLAY (CL), very stiff to hard, wet, with dark brown mottling
TxUU = 3070 (750)	41	17.1	105	4		
				6		MOTTLED DARK BROWN AND LIGHT BROWN CLAYEY GRAVEL (GC), dense, moist to wet
	36	10.3	99	8		
						(No free water encountered)

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Date: 10-12-18

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LOG OF BORING 3

JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **4**

*Converted to Standard Penetration Blow Counts

LOG OF BORING 4

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-30-18

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
Percent Free Swell = 20				0		GRAY-BROWN SANDY SILT (ML), medium stiff to stiff, moist to wet, with orange-brown mottling
Percent Free Swell = 20	16	14.8	104			
				2		GRAY-BROWN SANDY CLAY (CH), very stiff, wet
TxUU = 1640 (750)	47	21.2	104			LIGHT BROWN SANDY CLAY (CL), medium stiff to stiff, moist to wet
				4		
						BROWN CLAYEY GRAVEL (GC), dense to very dense, wet
	48	9.9		6		
				8		
	50+	16.1				
						(No free water encountered)

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Job No: 1352.2.1

Date: 10-12-18

Appr: JDM

LOG OF BORING 4

JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **5**

*Converted to Standard Penetration Blow Counts

LOG OF BORING 5

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-31-18

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
				0		GRAY-BROWN SANDY SILT (ML), soft, dry, porous
Percent Free Swell = 25	50+					YELLOW-BROWN CLAYEY SAND (SC), very dense, dry to moist
				2		
	50+	20.0	91			
				4		
UC(P) = 4000	31	21.8	99			becomes dense, wet
				6		
				8		
Percent Passing No. 200 Sieve = 52.7	20	23.7	95			
				10		to medium dense with zones of sandy clay
				12		
	16	22.2	102	14		
						(No free water encountered)

*Converted to Standard Penetration Blow Counts

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1

Date: 10-12-18

Appr: JDM

LOG OF BORING 5

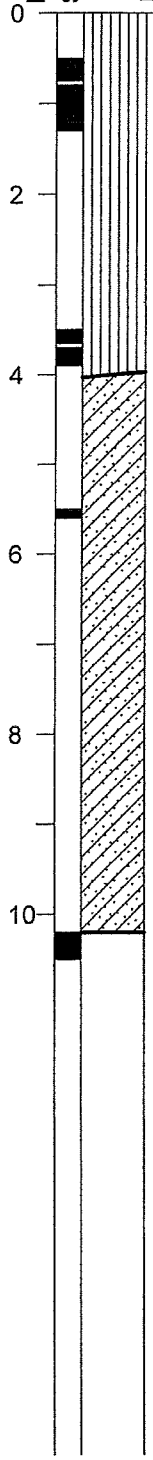
JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **6**

LOG OF BORING 6

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-31-18



Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
				0		GRAY-BROWN SANDY SILT (ML), very stiff to hard, dry, porous to about 1.0 feet, occasional fine roots
UC(P) = 4500+	18	12.6	104			
				2		
Percent Free Swell = 45	45	17.0	97	4		BROWN CLAYEY SAND (SC), dense, moist
	36	14.9		6		
				8		
				10		becomes very dense
	50+	16.9	90			
						(No free water encountered)

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CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1

Date: 10-12-18

Appr: JDM

LOG OF BORING 6

JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **7**

*Converted to Standard Penetration Blow Counts

LOG OF BORING 7

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-31-18

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
Percent Free Swell = 15	27			0		RED-BROWN SANDY SILT (ML), very stiff, dry, porous
TxUU = 2130 (500)	36	13.3	97	2		RED-BROWN SANDY CLAY (CL), stiff to hard, moist
	50+	24.7		4		MOTTLED RED-BROWN AND GRAY CLAYEY SAND (SC), very dense, wet
				6		MOTTLED RED-BROWN AND GRAY SANDY CLAY (CL), stiff to very stiff, moist to wet
LL = 49, PL = 22, PI = 27 UC(P) = 4500+	25	19.4	83	8		
	14	18.2	93	10		becomes olive-gray, stiff with occasional gravel
				12		(No free water encountered)

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1

Date: 10-12-18

Appr: JDM

LOG OF BORING 7

JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **8**

*Converted to Standard Penetration Blow Counts

LOG OF BORING 8

Equipment 6" FLIGHT AUGER

Elevation _____ Date 5-31-18

Laboratory Test Results or Remarks	Blows/foot *	Moisture Content (%)	Dry Density(pcf)	Depth (ft)	Sample	
				0		BROWN SILTY SAND (SM), medium dense, dry, porous with occasional fine roots
Percent Free Swell = 30	16	4.3	93	2		RED-BROWN SANDY CLAY (CL), stiff to very stiff, moist to wet
UC(P) = 4500+ Percent Free Swell = 40	45	26.8	87	4		MOTTLED LIGHT BROWN AND RED-BROWN SANDY SILT (ML), hard, moist to wet
TxUU = 1950 (1500)	35	34.0	82	6		LIGHT BROWN, GRAY AND ORANGE GRAVELLY CLAY (CL), stiff to hard, very moist to wet
				8		
				10		
UC(P) = 4500+ Percent Passing No. 200 Sieve = 56.0	15	21.6	94	12		becomes olive-brown
						(No free water encountered)

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1

Date: 10-12-18

Appr: JDM

LOG OF BORING 8

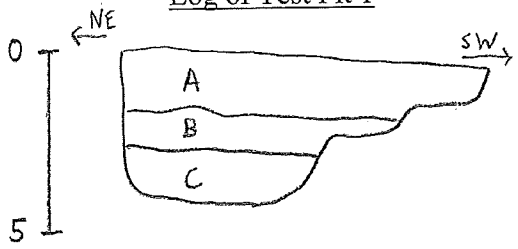
JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE **9**

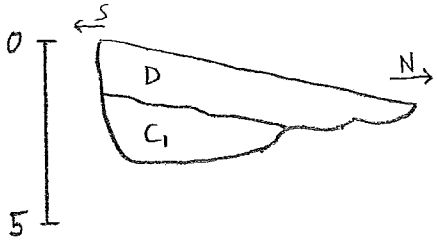
*Converted to Standard Penetration Blow Counts

Scale: 1 inch = 5 feet
Horizontal and Vertical

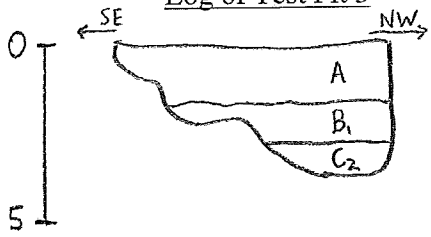
Log of Test Pit 1



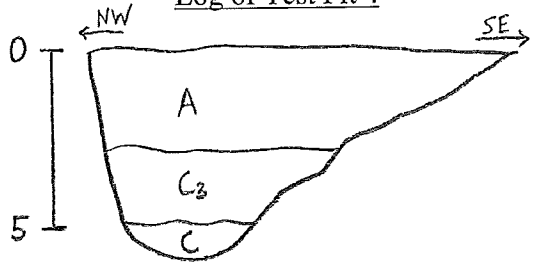
Log of Test Pit 2



Log of Test Pit 3



Log of Test Pit 4



Soil & Rock Descriptions

A = GRAY BROWN SANDY SILT (SM); very stiff, dry, porous with occasional gravels and abundant fine roots in upper 3 to 4 inches.

B = GRAY BROWN SANDY CLAY (CH); very stiff to hard, moist to wet, plastic.

B_1 = RED BROWN SANDY CLAY (CL); stiff, dry to moist.

C = YELLOW BROWN CLAYEY SAND (SC); very dense, moist with gravel (GLEN ELLEN FORMATION).

C_1 = GRAY BROWN CLAYEY GRAVEL (GC); very dense, moist, weakly cemented with zones of clay, cobbles, and orange brown mottling (GLEN ELLEN FORMATION).

C_2 = RED BROWN TUFF; low hardness, friable, deeply weathered with orange brown mottling (GLEN ELLEN FORMATION).

C_3 = RED BROWN MUDSTONE; soft to low hardness, plastic to friable, deeply weathered with occasional fine roots (GLEN ELLEN FORMATION).

D = GRAY BROWN SILTY GRAVEL (GM); medium dense, dry to moist, porous with few roots and cobbles.

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 1352.2.1 Date: 10-11-18 Appr: JDM	LOG OF TEST PITS 1 THROUGH 4 JENSEN LANE SUBDIVISION, WINDSOR, CALIFORNIA	PLATE 10

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS				TYPICAL NAMES
COARSE GRAINED SOILS (MORE THAN HALF IS LARGER THAN No. 200 SIEVE)	GRAVEL — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN No. 4 SIEVE SIZE	CLEAN GRAVEL WITH LESS THAN 5% FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		GRAVEL WITH OVER 12% FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SAND — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN No. 4 SIEVE SIZE	CLEAN SAND WITH LESS THAN 5% FINES	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND, GRAVELLY SAND
		SAND WITH OVER 12% FINES	SM	SILTY SAND, GRAVEL-SAND-SILT MIXTURE
			SC	CLAYEY SAND, GRAVEL-SAND-CLAY MIXTURE
FINE GRAINED SOILS (MORE THAN HALF IS SMALLER THAN No. 200 SIEVE)	SILT AND CLAY — LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILT, ROCK FLOUR, SANDY OR CLAYEY SILT WITH LOW PLASTICITY
			CL	INORGANIC CLAY OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, OR SILTY CLAY (LEAN)
			OL	ORGANIC CLAY AND ORGANIC SILTY CLAY OF LOW PLASTICITY
	SILT AND CLAY — LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOIL, ELASTIC SILT
			CH	INORGANIC CLAY OF HIGH PLASTICITY, GRAVELLY, SANDY OR SILTY CLAY (FAT)
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILT
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

KEY TO TEST DATA

							Shear Strength, psf	Confining Pressure, psf
EI	–	Expansion Index	TxUU	–	Unconsolidated Undrained Triaxial		320	(2600)
Consol	–	Consolidation	TxCU	–	Consolidated Undrained Triaxial		320	(2600)
LL	–	Liquid Limit (in %)	DSCD	–	Consolidated Drained Direct Shear		2750	(2000)
PL	–	Plastic Limit (in %)	FVS	–	Field Vane Shear		470	
PI	–	Plasticity Index	LVS	–	Laboratory Vane Shear		700	
SA	–	Sieve Analysis	UC	–	Unconfined Compression		2000	*
G_s	–	Specific Gravity	UC(P)	–	Laboratory Penetrometer		700	*
■		"Undisturbed" Sample						
□		Bulk Sample						

Notes: (1) All strength tests on 2.8" or 2.4" diameter samples unless otherwise indicated. * Compressive Strength

REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1
Date: 10-12-18
Appr: JDM

SOIL CLASSIFICATION CHART AND KEY TO TEST DATA
JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

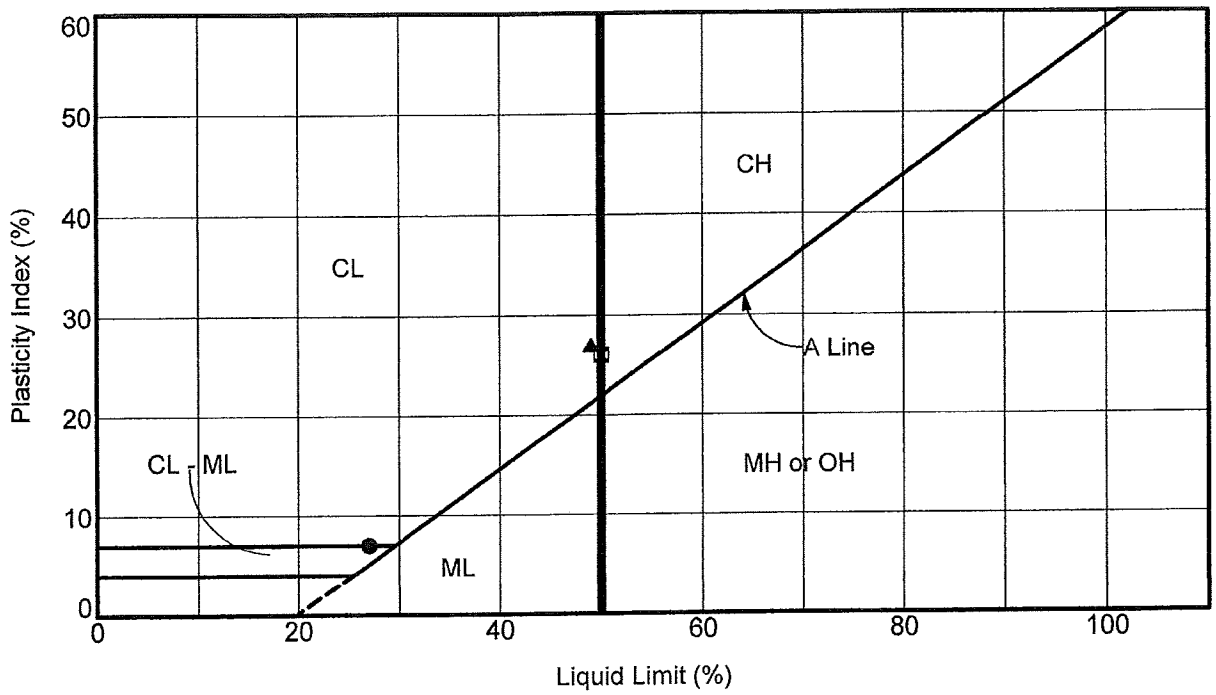
PLATE **11**

PIT NUMBER	DEPTH	TEST TYPE*	TEST RESULTS
1	1.0	FS	25.0
	1.0	UC(P)	4500+
	2.0	M	21.6
	2.0	FS	70
	2.0	UC(P)	3750
	3.5	M	16.8
	3.5	UC(P)	4500
2	0.5	UC(P)	1000
	0.5	M	27.3
	0.5	FS	20
	2.0	UC(P)	4500
	3.0	M	15.2
	3.0	FS	20
	3.0	UC(P)	4500
3	1.0	FS	10
	1.0	UC(P)	1500
	2.2	M	20.0
	2.2	FS	30
	2.2	UC(P)	3500
	3.0	M	17.9
	3.0	FS	30
	3.0	UC(P)	4500+
4	1.5	FS	15
	1.5	UC(P)	1000
	3.5	M	27.7
	3.5	FS	30
	3.5	UC(P)	3500
	5.5	M	27.9

*Test Type

M	Moisture Content (percent of dry weight)
MD	Moisture Content (percent of dry weight)/dry density (pounds per cubic foot)
UC(P)	Penetrometer - strength indicator (pounds per square foot)
UC	Unconfined Compression (pounds per square foot)
-200	Percent Passing No. 200 sieve by weight
FS	Percent Free Swell

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 1352.2.1 Date: 10-11-18 Appr: JDM	**LABORATORY TEST DATA** **JENSEN LANE SUBDIVISION** **WINDSOR, CALIFORNIA**	PLATE **12**



ASTM D 4318-98

Symbol	Classification and Source	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Free Swell (%)
●	**DARK BROWN SANDY CLAY (CL)** **Test Boring 1 at 1.0 feet**	**27**	**20**	**7**	**20**
⊠	**DARK BROWN SANDY CLAY (CH)** **Test Boring 3 at 2.2 feet**	**50**	**24**	**26**	**90**
▲	**BROWN SANDY CLAY (CL)** **Test Boring 7 at 7.0 feet**	**49**	**22**	**27**	--

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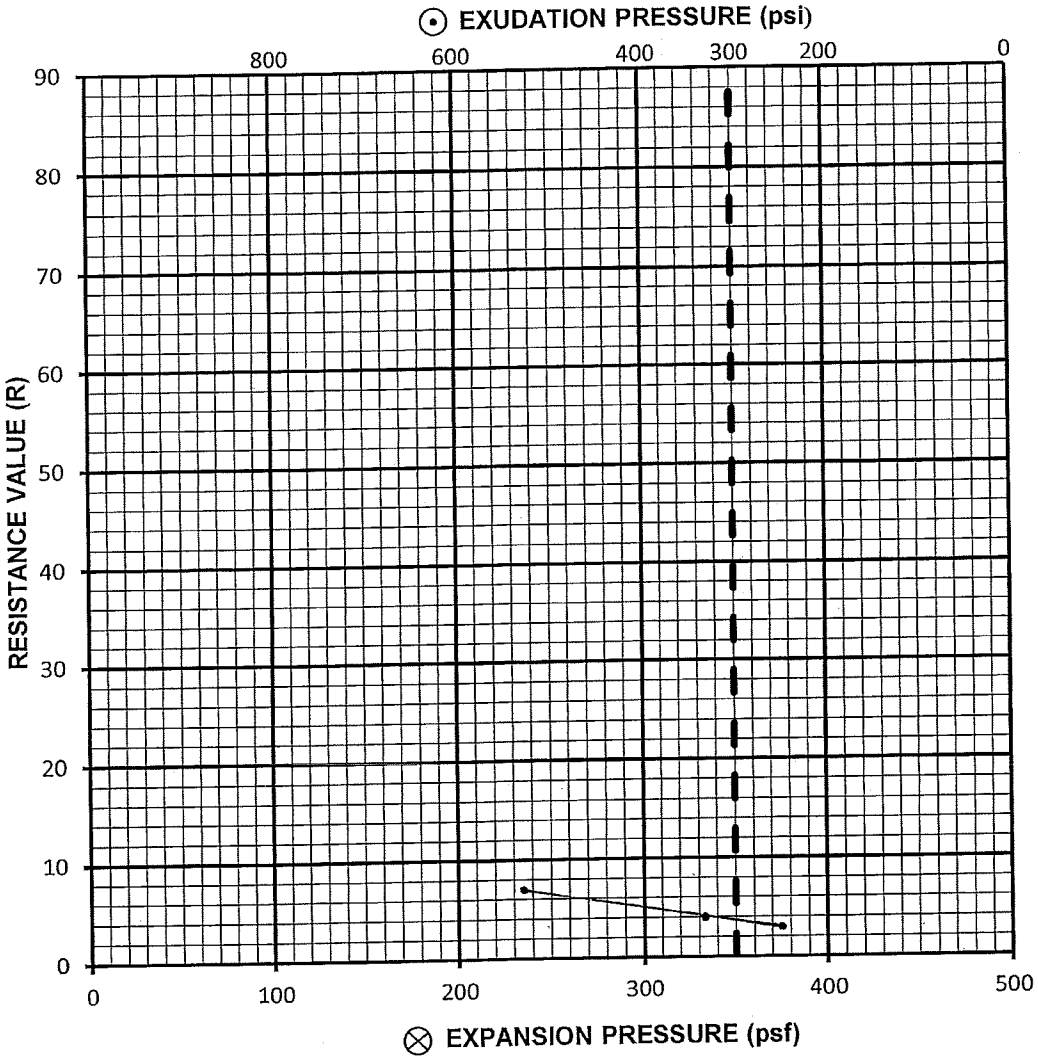
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1
Date: 10-12-18
Appr: JDM

ATTERBERG LIMITS TEST RESULTS

JENSEN LANE SUBDIVISION
WINDSOR, CALIFORNIA

PLATE
13



Specimen	A	B	C
Moisture Content (%)	25.9	23.7	22.0
Dry Density (pcf)	97	102	103
Exudation Pressure (psi)	247	334	533
Expansion Pressure (psf)	0	0	0
Resistance Value (R)	3	4	7

Sample Source	Classification	Expansion Pressure (psf)	R-Value
Bulk 1; 1.0 to 2.0 feet	GRAY BROWN SANDY CLAY (CH)	--	5

Reference: State of California 301, ASTM D2844

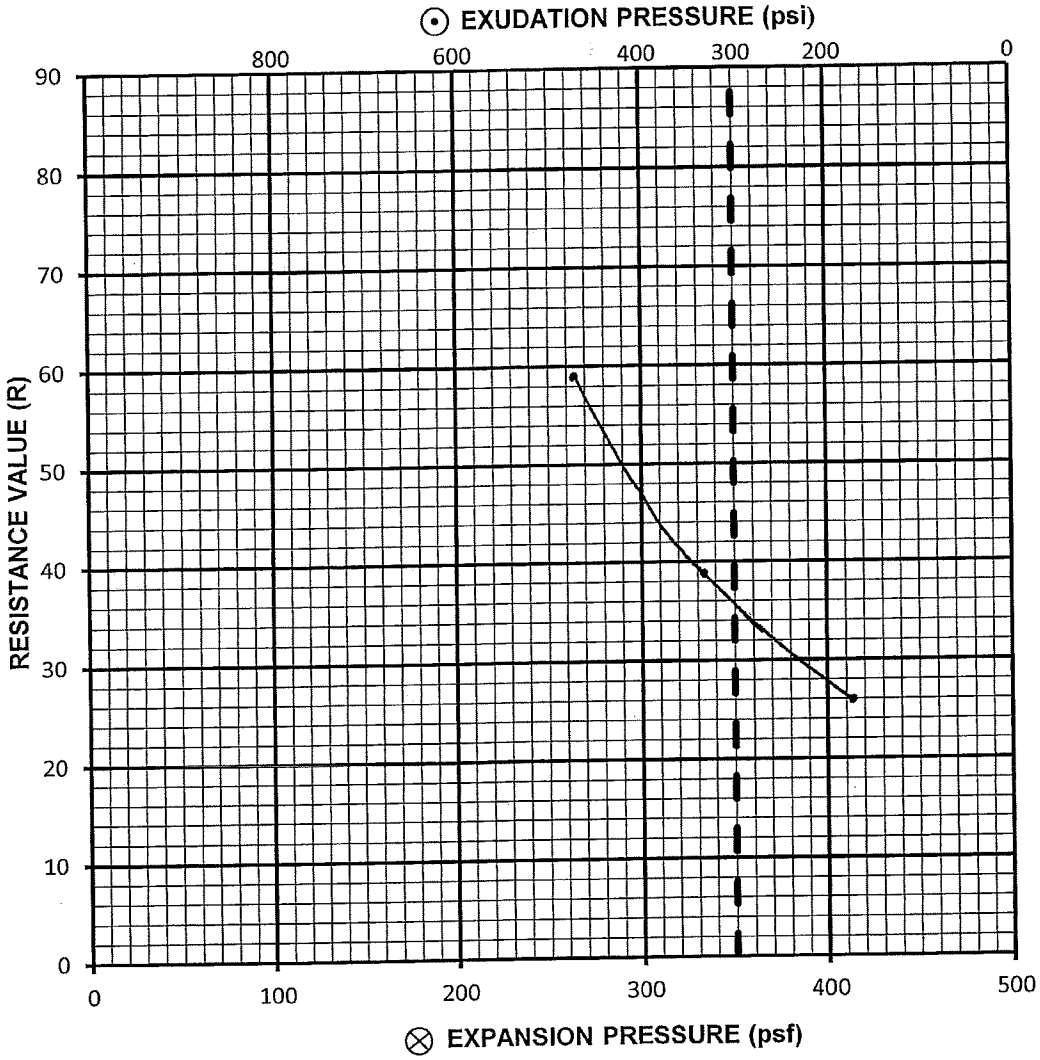
REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1
Date: 10-10-18
Appr: JDM

R-VALUE TEST RESULTS

JENSEN SUBDIVISION
WINDSOR, CALIFORNIA

PLATE
14



Specimen	A	B	C
Moisture Content (%)	16.3	14.9	13.9
Dry Density (pcf)	112	115	115
Exudation Pressure (psi)	174	335	471
Expansion Pressure (psf)	9	31	118
Resistance Value (R)	26	39	59

Sample Source	Classification	Expansion Pressure (psf)	R-Value
Bulk 2; 1.0 to 2.0 feet	LIGHT BROWN SANDY CLAY (CL)	19	35

Reference: State of California 301, ASTM D2844

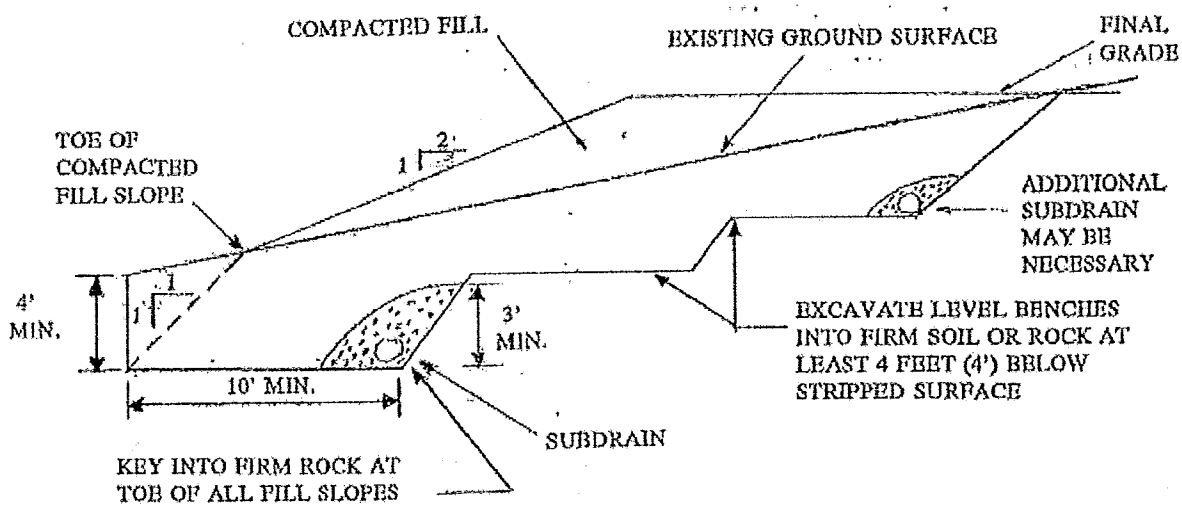
REESE & ASSOCIATES
CONSULTING GEOTECHNICAL ENGINEERS

Job No: 1352.2.1
Date: 10-10-18
Appr: JDM

R-VALUE TEST RESULTS

JENSEN SUBDIVISION
WINDSOR, CALIFORNIA

PLATE
15



TYPICAL FILL SECTION
(NOT TO SCALE)

NOTES:

1. Dimensions shown are for estimating purposes. Actual dimensions and extent of keyways, benches, and subdrains will be determined in the field by the soil engineer.

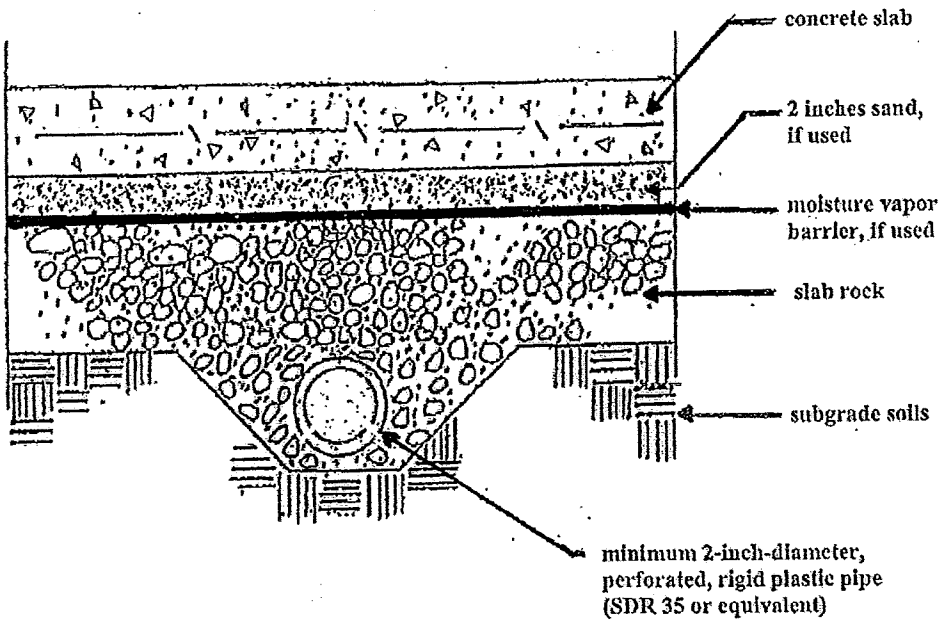
2. The upper 6 inches of soil exposed by excavation should be scarified, moisture conditioned and compacted to at least 90 percent relative compaction.

3. Fill should be placed in thin lifts and similarly compacted.

4. Slopes should be planted with deep-rooted vegetation (or protected by other suitable means) to reduce erosion.

5. Subdrains should consist of 4-inch-diameter perforated, rigid plastic pipe (SDR-35 or equivalent) with a gravity outlet and Class 2 Permeable material, or any drainrock encased in a nonwoven geotextile fabric weighing at least 4 ounces per square yard.

REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 1352.2.1 Date: 10-10-18 Appr: JDM	TYPICAL CROSS-SECTION HILLSIDE GRADING JENSEN LANE SUBDIVISION WINDSOR, CALIFORNIA	PLATE 16



REESE & ASSOCIATES CONSULTING GEOTECHNICAL ENGINEERS	Job No: 1352.2.1 Date: 10-10-18 Appr: JDM	**TYPICAL CROSS-SECTION UNDERSLAB SUBDRAIN** **JENSEN LANE SUBDIVISION WINDSOR, CALIFORNIA**	PLATE **17**

Appendix C

Hydrology Analysis

THE ESTATES AT ROSS RANCH
HYDROLOGY ANALYSIS

THE ESTATES AT ROSS RANCH

1295 Jensen Lane
A.P.N 162-020-004
PROJECT #18101
July 7, 2020

ANALISYS PREPARED BY
TDG CONSULTING CIVIL ENGINEERS, INC.
CIVIL ENGINEERING – LAND SURVEYING
883 3rd Street, Santa Rosa, CA 95404
(707) 577-0425 Office (707) 573-1418 FAX
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OWNER
Synergy Group.
435 E street
SANTA ROSA CA 95404
(707) 577-0425



Charlie Traboulsi RPE No.34079

Mr. Phillip E. Wadsworth
Sonoma County Water Agency
Flood and Drainage Review
2227 Capricorn Way, Building E, Suit 108
Santa Rosa CA 95407

Dear Phil:

Enclosed for your initial plan check are the following items for THE ESTATES AT ROSS RANCH subdivision 1295 Jensen Lane Windsor Ca.95942:

Page(s)	Item
1	Transmittal Letter
3-5	Explanation of Analysis approach
2	Submittal Information sheet
Attached	Tentative Map
Attached	Final Map or Parcel Map (if applicable)
Attachment 1	Hydrology Map
3-7 & 9-11 Plates (B1,B3,B4)	Establish Factors used in Analysis
7-18	Hydrology Calculation (*) 10-year Storm and (*) 100-year Storm
7-18	Hydraulic Calculations
Attachments A1 – A4	Establish Starting HGL (from Vintage Hill Subdivision Hydrology map & Calculations file #8-8-7-5)
Attachment 2A-2D	(*) EGL and (*) HGL Plots 10 yr.
Attachment 3	100-year Storm Routing
See Attachment 3	100-year Storm Elevations
23-28	Curb Water Depth Calculations
29	Inlet Capacity calculations
30	Assessor Parcel Map with Site Outlined

Please contact me if you have any questions or comments regarding this submittal.
Thanks.
TDG Consulting Civil Engineers, Inc

Charlie Traboulsi

FLOOD AND DRAINAGE REVIEW PLAN SUBMITTAL CHECKLIST

PROJECT NAME: ESTATES AT ROSS RANCH SUBDIVISION
DATE:
SCWA FILE# _____

- ✓ **TRASNMITTAL LETTER**
- ✓ **EXPLANATION OF ANALYSIS**
- ✓ **SUBMITTAL INFORMATION SHEET**
- ✓ **PLAN CHECK FEE**
- ✓ **IMPROVEMENTS PLANS**
- ✓ **FINAL MAP OR PARCEL MAP**
- ✓ **HYDROLOGY MAP**
- ✓ **ESTABLISH FACTORS USED IN ANALYSIS**
- ✓ **HYDROLOGY CALCULATIONS**
- ✓ **10-YEAR STORM**
- ✓ **100-YEAR STORM**
- ✓ **HYDRAULIC CALCULATIONS**
- ✓ **ESTABLISH STARTING HGL**
- ✓ **EGL AND HGL PLOTS**
- ✓ **100-YEAR STORM ROUTING**
- ✓ **100-YEAR STORM ELEVATION VS FINISH FLOOR ELEVATIONS**
- ✓ **INLET CAPACITY CALCULATIONS**
- ✓ **CURB WATER DEPTH CALCULATIONS**
- ✓ **ASSESOR PARCEL MAP WITH SITE OUTLINED**
- ✓ **COPY OF THE CONDITIONS OF APPROVAL OF THE PROJECT**

INTRODUCTION

This submittal package contains the hydrology maps and hydraulic calculations for THE ESTATES AT ROSS RANCH project.

The references used for this report are:

- Flood Control Design Criteria, Sonoma County Water Agency

This drainage report analyzes the flow capacity of the underground storm drain system for the 10-year storm event.

All documentation used in supporting our analysis is included in the various sections or the exhibits section of this package.

PROJECT DESCRIPTION

This plan is being developed to control run-off from development of a 30 lot Major subdivision. The project is located at 1295 Jensen Lane, east of town of Windsor. The Parcel is approximately 16.17 acres in size. The proposed development will consist of 30 lots. A new road is proposed through the property Portland Way, the extension of prince George Way Connecting with Jensen Lane.

EXISTING SITE CONDITION

The site with A.P.N 162-020-004 with address 1295 Jensen Lane; the Parcel is at rural residential designated there is an existing residence with multiples ban/sheds within the subject site; and existing driveway connecting the main residence and structures from Jensen Lane; existing vegetation is a combine grass, trees (see horticultural report for save and removed trees mitigation plan) and vineyard rows. Project site slope westerly at 0% to 5% ± there is a high point ridge close to the center of the subject parcel; There are two point of connection one will be tie to an existing 36” storm drain pipe between lot 46 and 47 of Vintage Hill Subdivision, the second point of connection is 24” storm drain at the end of the improvement at Prince George Way.

HYDROLOGY

The following hydrology calculations were performed using variables of the modified Rational Method. The variables used in the analysis were obtained from the latest SCWA Flood Control Design Criteria Manual. Runoff coefficients were calculated for each tributary area based on "Commercial, Industrial & Multiple Residential Areas" shown on Plate B-1 of the SCWA Design Criteria Manual, with a value of 0.35 used for C_V and a value of 0.90 used for C_P. Additionally, the initial time of concentrations are per the SCWA Flood Control Design Criteria Manual plate B-1, and were set at 10 minutes for this project. These two variables reflect the current land use of the property.

The intensity of the rainfall was calculated using the equations found on Plate B-2 of the SCWA Manual. The K-factor was determined by locating the project on the Mean Seasonal Precipitation Map of Sonoma County (Plate B-3) and reading the corresponding K-factor value from the K-factor vs. Mean Seasonal Precipitation chart (Plate B-4). This project receives approximately 40 inches of rainfall per year, and therefore has a K-factor of 1.33. Thus, no modifications to the rainfall intensity equations were necessary.

The hydrology calculations were performed using the Hydraflow Storm Sewers Extension for Civil 3D software developed and marketed by Autodesk. This software suite calculates the peak flow of a catchment by simultaneously calculating a basin's hydrologic characteristics and hydraulic capacity. This differs from the traditional approach of calculating the hydrology independent of any hydraulic or backwater effects. In some situations, this sort of analysis appears to lengthen the time of concentration of a basin due to the velocity in the pipes of the system being calculated under backwater conditions rather than under full-flow/ gravity depth velocities. Such an approach is slightly less conservative, but is probably more realistic. Further explanation of the implications of this approach is discussed in the Hydraulic Section of this submittal.

The enclosed THE ESTATES AT ROSS RANCH project Map define the limits of the local catchments and have been used as the basis for determining the runoff quantities that the project's storm drain systems must convey. The limits of these areas were determined by the proposed project improvements.

HYDRAULICS

Basis

As was mentioned in the preceding section, the hydraulics for this project was analyzed simultaneously with the hydrology of the project. Therefore, the hydraulics and hydrology are more interdependent than had they been analyzed separately.

Starting HGL

The storm drain network was divide on two areas one will connect on the Existing 36" RCP between lot 46 & 47 at west property line at "Vintage Hills Subdivision" File # 8-8-7-5; 10 year HGL=153.9 feet and feet higher for the 100 year HGL= 154.66 .The second storm drain network will connect at the existing 24" storm drain at the end of improvements at Prince George Way 10 year HGL= 146.46.05 feet and the 100 year HGL= 147.16 feet.

Note: HGL calculations were base on the Drainage report for Vintage Hill Subdivision file # 8-8-7-5 dated 9/28/88.

Project Datum

The benchmark of the project base on top brass dick in standard monument well at P.I. of curve of center line of Hembree lane, approximately 366 feet south of intersection of foot hill Drive and Hembree Lane; Elevation 156.53 USGS Datum.

System Analysis

The Autodesk software automatically computes losses at junctions and inlets of a system based on data adapted from FHWA HEC No. 22. The hydrology/backwater analysis of this submittal is based on this method. The following Storm Sewer Tabulations show the HGLs for the piped storm drain system networks within the project. The attached Estates at Ross Ranch Hydrology Map show the project tributary areas and storm drain system in relation to the calculations.

Inlet Capacity Analysis

The capacity of inlet structures within the model has been calculated by the software. The software calculates the capacity of all inlet structures within the model, and reports the

capture efficiency. The proposed Catch Basin (CB) within the project's tributary boundaries have been analyzed. Had the capacity of any of CB's been exceeded, the capture efficiency would have been reported to be less than 100%. During the 10-year storm event, the proposed CB's structures within the study area have an efficiency level of 100%. The worst case gutter depth for catch basins and depth of water are included in the hydraulic pages.

100-Year Overland Release

The proposed storm drain improvements for The Estates at Ross Ranch project were designed for the 10-year storm event. During the 100-year storm event, the project will route drainage over land. The attached Colgan Village Hydrology Map included a map showing the flood routing course and areas of anticipated inundation, and flood routing during a 100-year event. The route was determined by calculating the HGL at each proposed and existing inlet of the project, in addition to analyzing the degree of ponding that must occur in order for the flow to pass obstacles, such as curbs and high points. The finish floor elevations, accumulation escape elevations, and local break point escape elevations can all be seen on this map. There is a minimum of 1 foot freeboard between the finished floor elevations and the 100yr max. water surface elevation is 168.24 '

CONCLUSION

The hydraulic calculations contained in this report demonstrate that that during the 10-year storm event the HGL is below the inlet elevation of all drainage structures. All building structures will remain flood free during the 100-year storm event.

The proposed storm drain improvements will contain both the 10-year storm and 100-year flood events on site before entering the existing storm drain system. There will be no additional negative impacts to the adjacent properties with respect to pre-project and post-project flooding.

TRIBUTARIES

A-1 0.12 AC (5,101 SF)

A-2 0.39 AC (16,952 SF)

A-3 0.26 AC (11,509 SF)

A-4 2.84 AC (123,653 SF)

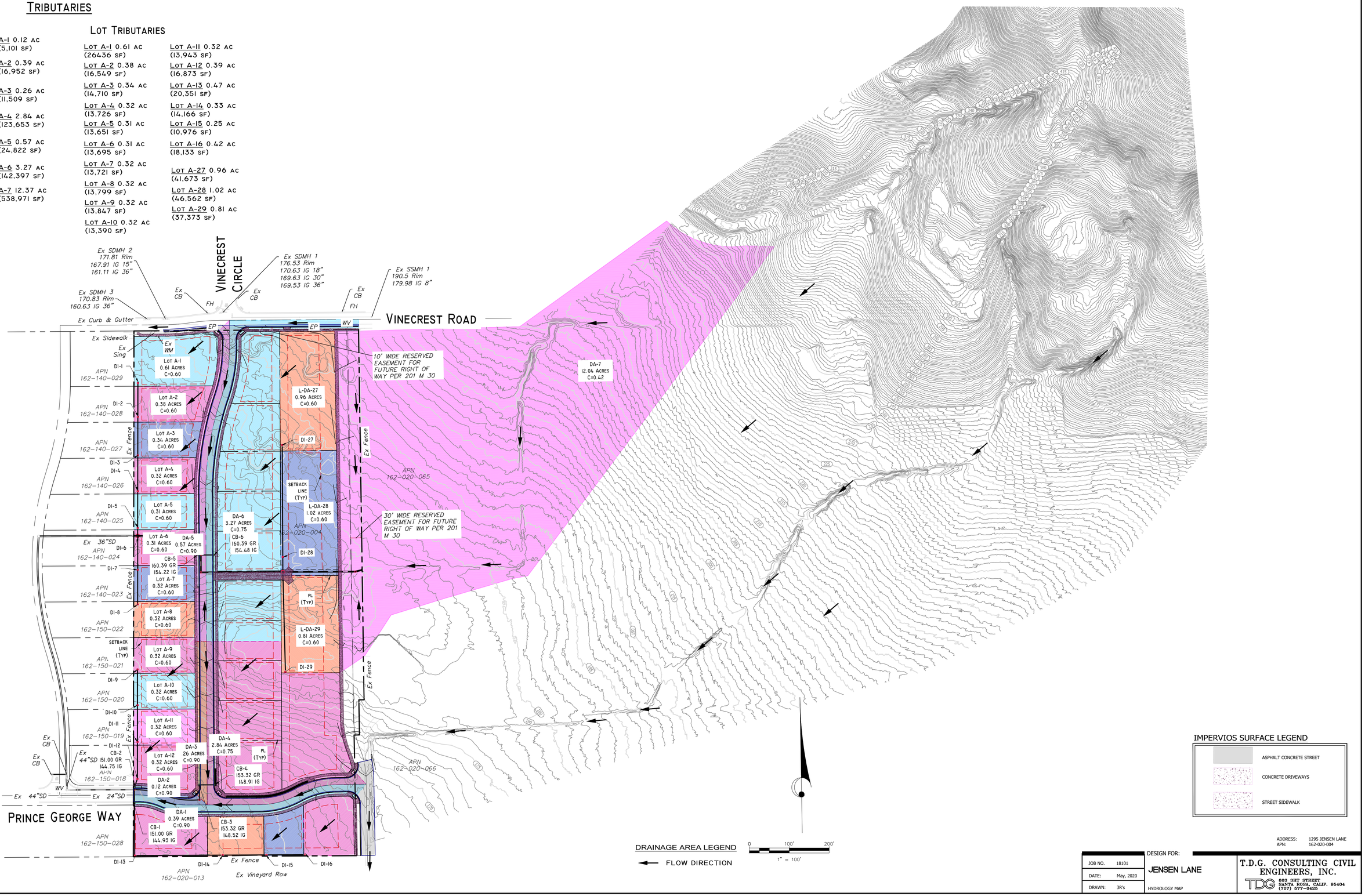
A-5 0.57 AC (24,822 SF)

A-6 3.27 AC (142,397 SF)

A-7 12.37 AC (538,971 SF)

LOT TRIBUTARIES

LOT A-1 0.61 AC (26436 SF)
LOT A-2 0.38 AC (16,549 SF)
LOT A-3 0.34 AC (14,710 SF)
LOT A-4 0.32 AC (13,726 SF)
LOT A-5 0.31 AC (13,651 SF)
LOT A-6 0.31 AC (13,695 SF)
LOT A-7 0.32 AC (13,721 SF)
LOT A-8 0.32 AC (13,799 SF)
LOT A-9 0.32 AC (13,847 SF)
LOT A-10 0.32 AC (13,390 SF)
LOT A-11 0.32 AC (13,943 SF)
LOT A-12 0.39 AC (16,873 SF)
LOT A-13 0.47 AC (20,351 SF)
LOT A-14 0.33 AC (14,166 SF)
LOT A-15 0.25 AC (10,976 SF)
LOT A-16 0.42 AC (18,133 SF)
LOT A-27 0.96 AC (41,673 SF)
LOT A-28 1.02 AC (46,562 SF)
LOT A-29 0.81 AC (37,373 SF)



DRAINAGE AREA LEGEND
FLOW DIRECTION

0 100' 200'
1" = 100'

IMPERVIOS SURFACE LEGEND
ASPHALT CONCRETE STREET
CONCRETE DRIVEWAYS
STREET SIDEWALK

ADDRESS: 1295 JENSEN LANE
APN: 162-020-004

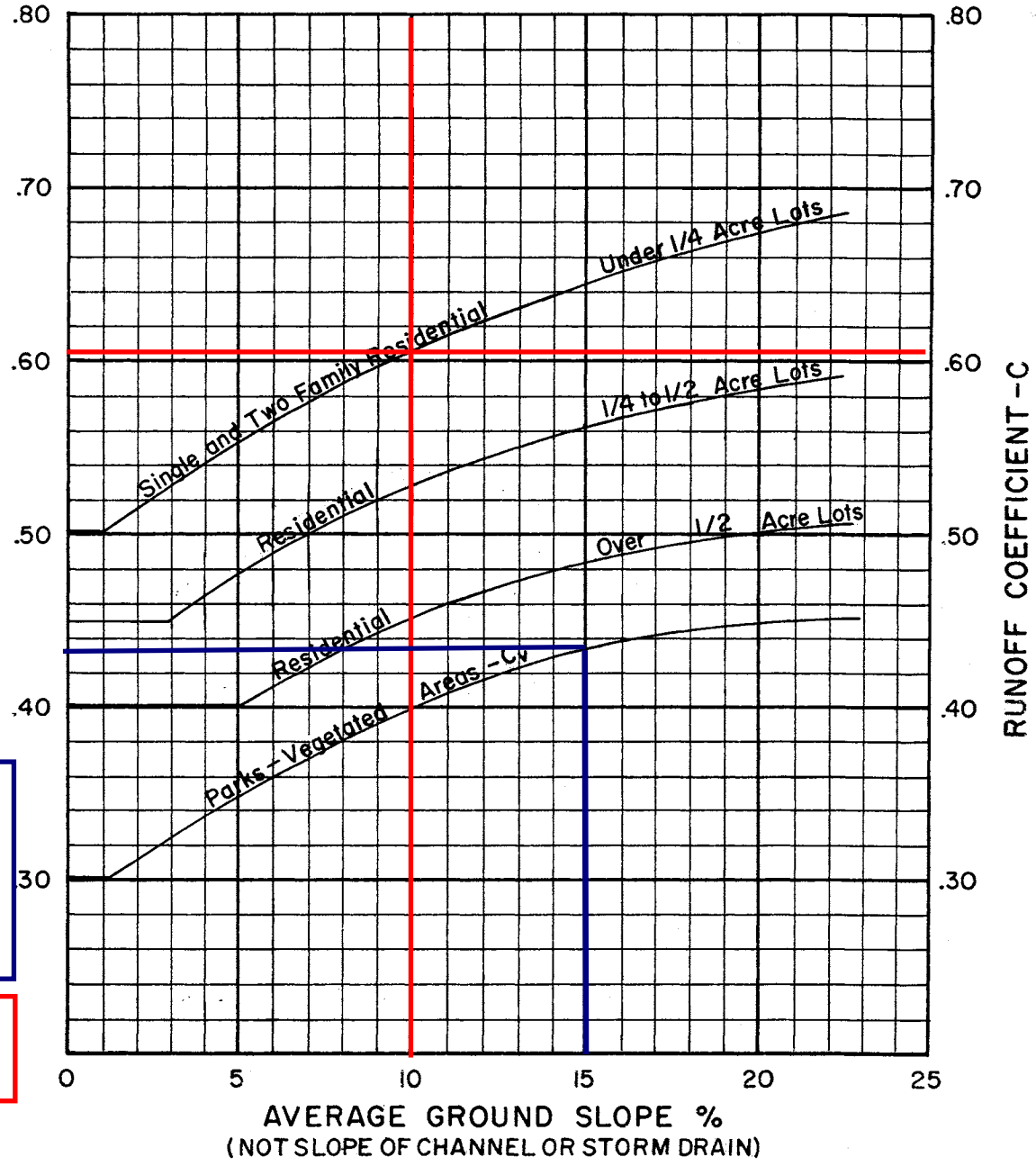
JOB NO.	18101
DATE:	May, 2020
DRAWN:	3R's

DESIGN FOR: JENSEN LANE
HYDROLOGY MAP

T.D.G. CONSULTING CIVIL ENGINEERS, INC.
TDG 803 3HT STREET SANTA ROSA, CALIF. 95404 (707) 577-0455

Attachment 1

RUNOFF COEFFICIENTS FOR RATIONAL FORMULA



Drainage Areas: Open space with slope average slope 15% C=0.42

Drainage Areas: Lots C=0.60

NOTE: Commercial, Industrial & Multiple Residential Areas

$C_P = 0.9$ (Based on paving, roofs, etc.)

When vegetated area exceeds 20% of total, C_V from vegetated curve may be used to reduce above C_P as follows:

$$C_T = C_V \frac{A_V}{A_T} + C_P \frac{A_P}{A_T}$$

Street areas with planter strip C=0.90 conservative assumption

SONOMA COUNTY WATER AGENCY

118-2
7/64

PLATE No. B-1

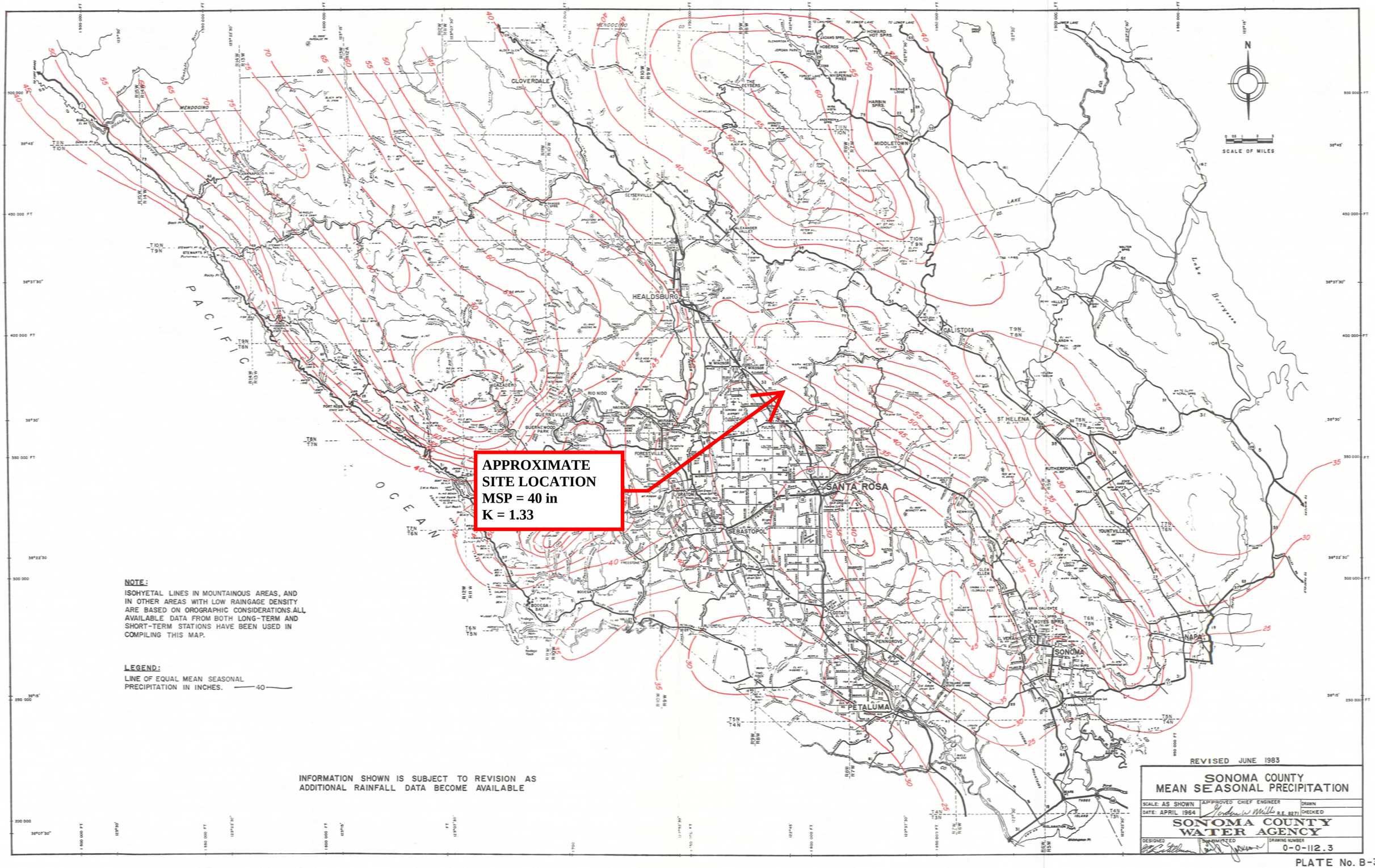

APPROXIMATE
SITE LOCATION
MSP = 40 in
K = 1.33
NOTE:
ISOHYETAL LINES IN MOUNTAINOUS AREAS, AND IN OTHER AREAS WITH LOW RAINGAGE DENSITY ARE BASED ON OROGRAPHIC CONSIDERATIONS.ALL AVAILABLE DATA FROM BOTH LONG-TERM AND SHORT-TERM STATIONS HAVE BEEN USED IN COMPILING THIS MAP.
LEGEND:
LINE OF EQUAL MEAN SEASONAL PRECIPITATION IN INCHES. —40—
INFORMATION SHOWN IS SUBJECT TO REVISION AS ADDITIONAL RAINFALL DATA BECOME AVAILABLE
SCALE OF MILES
REVISED JUNE 1983
SONOMA COUNTY
MEAN SEASONAL PRECIPITATION
SCALE: AS SHOWN
DATE: APRIL 1964
APPROVED CHIEF ENGINEER
R.E. 8271
DRAWN
CHECKED
SONOMA COUNTY
WATER AGENCY
DESIGNED
SUBMITTED
DRAWING NUMBER
0-0-112.3
PACIFIC OCEAN
Lake Berryessa
GLOVERDALE
HEALDSBURG
SANTA ROSA
PETALUMA
SONOMA
NAPA
CALISTOGA
ST HELENA
GUERNEVILLE
SEBASTOPOL
MIDDLETOWN

PLATE No. B-3

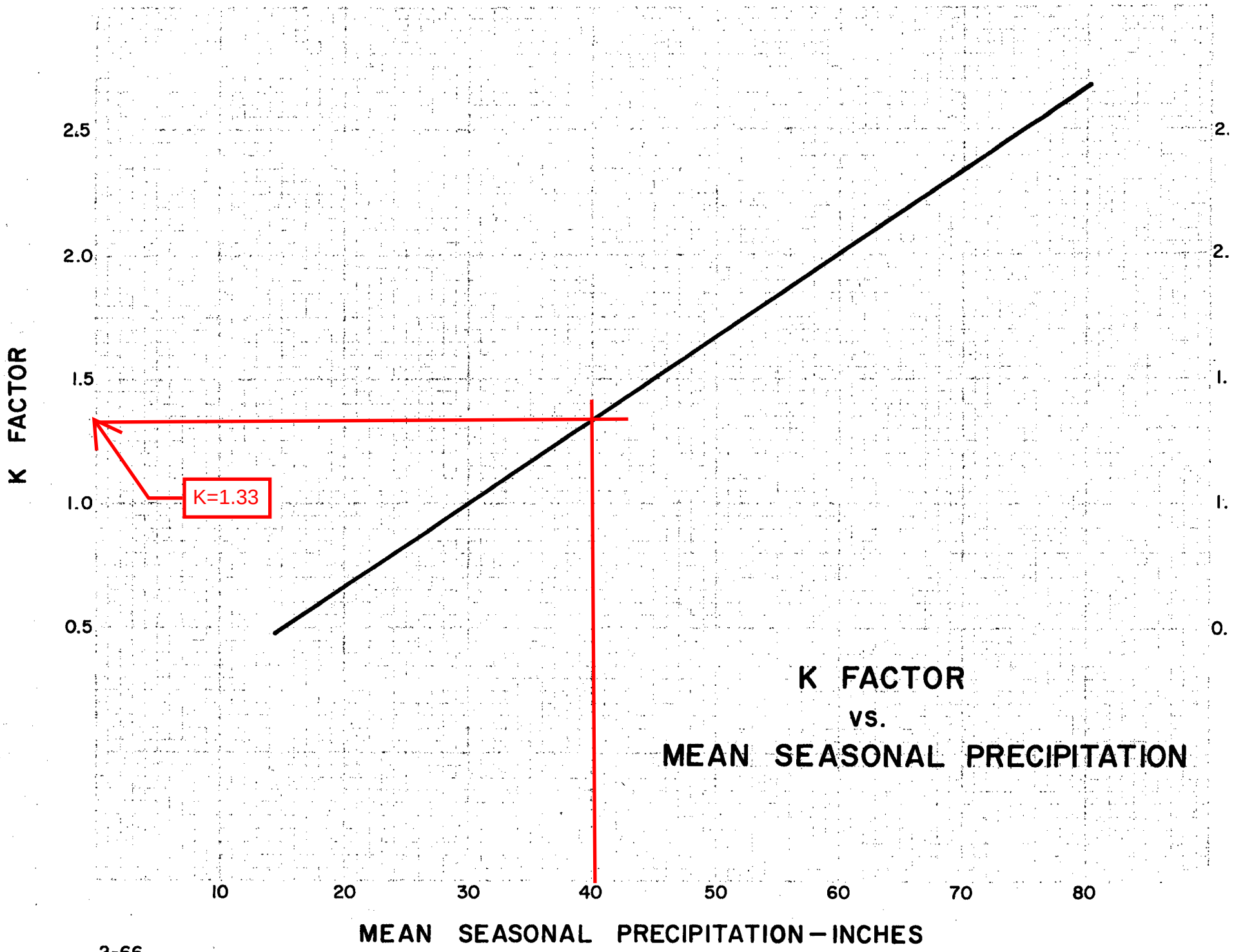


PLATE No. B-4

2-66

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	OUT EX-36 TO NODE	16.24	36	Cir	237.000	147.91	150.91	1.266	153.96*	154.08*	0.01	154.09	End	None
2	NODE -DI-6	16.27	36	Cir	11.000	150.91	151.13	2.000	154.09	154.10	0.12	154.22	1	DropGrate
3	DI-6 TO SDMH-3	14.23	36	Cir	158.075	151.13	153.00	1.183	154.22	154.20	n/a	154.20 j	2	Manhole
4	SDMH-3 TO SDMH-4	14.37	36	Cir	49.043	153.00	153.25	0.510	154.20	154.46	0.45	154.46	3	Manhole
5	SDMH-4 TO SDMH-5	10.14	36	Cir	43.515	153.25	154.00	1.724	154.46	155.01	n/a	155.01 j	4	Manhole
6	SDMH-5 TO DI-30	10.28	36	Cir	47.000	154.00	154.74	1.574	155.01	155.75	n/a	155.75	5	DropGrate
7	DI-31 TO DI-30	10.68	36	Cir	158.859	154.74	159.48	2.984	155.75	160.51	n/a	160.51	6	DropGrate
8	DI-30 TO SDMH-6	8.61	36	Cir	181.808	159.48	163.61	2.272	160.51	164.54	n/a	164.54 j	7	Manhole
9	SDMH-6 TO HW-1	8.68	36	Cir	17.501	164.00	168.10	23.427	164.54	169.03	0.34	169.03	8	OpenHeadwall
10	DI-30 TO DI-28	2.41	15	Cir	37.415	162.10	162.79	1.844	162.53	163.41	n/a	163.41	7	DropGrate
11	DI-28 TO DI-27	1.47	15	Cir	280.775	162.79	170.87	2.878	163.41	171.35	n/a	171.35 j	10	DropGrate
12	DI-6 TO DI-5	2.31	15	Cir	19.509	153.68	155.08	7.176	154.22	155.69	n/a	155.69	2	DropGrate
13	DI-5 TO DI-4	2.02	15	Cir	92.442	155.08	156.89	1.958	155.69	157.46	n/a	157.46 j	12	DropGrate
14	DI-4 TO DI-3	1.68	12	Cir	89.710	157.01	158.40	1.549	157.46	158.95	n/a	158.95	13	DropGrate
15	DI-3 TO DI-2	1.35	15	Cir	96.541	158.28	160.58	2.382	158.95	161.04	n/a	161.04 j	14	DropGrate
16	DI-2 TO DI-1	0.94	15	Cir	84.826	160.58	160.99	0.483	161.04	161.37	n/a	161.37	15	DropGrate
17	DI-30 TO DI-29	1.24	15	Cir	251.000	160.45	167.72	2.896	160.72	168.16	n/a	168.16	7	DropGrate
18	DI-6 TO DI-7	0.79	15	Cir	85.209	153.17	154.25	1.267	154.22	154.60	n/a	154.60 j	2	DropGrate
19	DI-7 TO DI-8	0.49	15	Cir	87.124	154.25	154.73	0.551	154.60	155.00	n/a	155.00 j	18	DropGrate
20	SDMH-4 TO CB-5	1.32	15	Cir	6.335	154.16	154.22	0.947	154.53	154.67	0.17	154.67	4	Curb-
21	SDMH-4 TO CB-6	6.28	15	Cir	32.335	154.16	154.48	0.990	155.09	155.49	0.54	155.49	4	Curb-
22	EX-SD TO SDMH-1	7.18	18	Cir	166.000	142.82	144.77	1.175	146.46*	147.12*	0.26	147.38	End	Manhole
23	SDMH-1 TO CB-1	1.62	15	Cir	4.696	144.77	144.78	0.213	147.38*	147.38*	0.02	147.40	22	Curb-
24	CB-1 TO DI-12	1.45	15	Cir	24.602	144.78	146.61	7.438	147.40	147.39	0.04	147.42	23	DropGrate
25	DI-12-DI-11	1.09	15	Cir	102.741	146.61	147.12	0.496	147.42	147.53	n/a	147.53 j	24	DropGrate
26	DI-11 TO DI-10	0.79	15	Cir	86.845	147.12	151.46	4.997	147.53	151.81	n/a	151.81 j	25	DropGrate
27	DI-9 TO DI-8	0.49	15	Cir	85.024	152.46	155.96	4.116	152.62	156.23	0.10	156.23	26	DropGrate
28	SDMH-1 TO NODE	5.69	18	Cir	73.000	144.77	146.24	2.014	147.38	147.52	0.03	147.55	22	None
29	NODE TO SDMH-2	5.88	18	Cir	94.000	146.24	148.15	2.032	147.55	149.09	n/a	149.09 j	28	Manhole
30	SDMH-2 TO CB-3	5.96	18	Cir	37.392	148.15	148.52	0.990	149.09	149.46	n/a	149.46	29	Curb-
31	CB-3 TO CB-4	5.45	18	Cir	38.676	148.52	148.91	1.008	149.46	149.81	n/a	149.81 j	30	Curb-

Project File: Jensen Lane 10 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
32	SDMH-1 TO CB-2	1.98	15	Cir	31.221	144.77	144.93	0.512	147.38*	147.40*	0.02	147.42	22	Curb-
33	CB-2 TO DI-13	1.48	15	Cir	132.326	144.93	145.59	0.499	147.42*	147.48*	0.03	147.52	32	DropGrate
34	DI-13 TO DI-14	1.13	15	Cir	215.088	145.59	146.67	0.502	147.52	147.57	0.01	147.58	33	DropGrate
35	DI-14-DI-15	0.84	15	Cir	112.444	146.67	147.23	0.498	147.58	147.59	n/a	147.59	34	DropGrate
36	DI-15 TO DI-16	0.65	15	Cir	103.306	147.23	147.75	0.503	147.59	148.06	n/a	148.06 j	35	DropGrate

Project File: Jensen Lane 10 Yrs.stm	Number of lines: 36	Run Date: 7/7/2020

NOTES: Return period = 10 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	237.000	0.00	21.78	0.00	0.00	11.56	0.0	22.0	1.4	16.24	81.29	2.30	36	1.27	147.91	150.91	153.96	154.08	151.99	154.70	OUT EX-36 TO NODE
2	1	11.000	0.31	21.78	0.60	0.19	11.56	7.0	21.9	1.4	16.27	102.2	2.30	36	2.00	150.91	151.13	154.09	154.10	154.70	158.47	NODE -DI-6
3	2	158.075	0.00	18.87	0.00	0.00	9.82	0.0	20.7	1.4	14.23	78.58	3.70	36	1.18	151.13	153.00	154.22	154.20	158.47	161.13	DI-6 TO SDMH-3
4	3	49.043	0.00	18.87	0.00	0.00	9.82	0.0	20.4	1.5	14.37	51.59	5.42	36	0.51	153.00	153.25	154.20	154.46	161.13	160.10	SDMH-3 TO SDMH-4
5	4	43.515	0.00	15.03	0.00	0.00	6.85	0.0	19.9	1.5	10.14	94.85	4.34	36	1.72	153.25	154.00	154.46	155.01	160.10	161.11	SDMH-4 TO SDMH-5
6	5	47.000	0.10	15.03	0.60	0.06	6.85	7.0	19.4	1.5	10.28	90.66	4.91	36	1.57	154.00	154.74	155.01	155.75	161.11	162.27	SDMH-5 TO DI-30
7	6	158.859	0.10	14.93	0.60	0.06	6.79	7.0	17.7	1.6	10.68	124.8	5.01	36	2.98	154.74	159.48	155.75	160.51	162.27	167.09	DI-31 TO DI-30
8	7	181.808	0.00	12.04	0.00	0.00	5.06	0.0	15.2	1.7	8.61	108.9	4.32	36	2.27	159.48	163.61	160.51	164.54	167.09	172.42	DI-30 TO SDMH-6
9	8	17.501	12.04	12.04	0.42	5.06	5.06	15.0	15.0	1.7	8.68	349.7	7.41	36	23.43	164.00	168.10	164.54	169.03	172.42	171.89	SDMH-6 TO HW-1
10	7	37.415	1.02	1.98	0.60	0.61	1.19	7.0	10.9	2.0	2.41	9.50	5.21	15	1.84	162.10	162.79	162.53	163.41	167.09	167.18	DI-30 TO DI-28
11	10	280.775	0.96	0.96	0.60	0.58	0.58	7.0	7.0	2.6	1.47	11.87	2.91	15	2.88	162.79	170.87	163.41	171.35	167.18	174.66	DI-28 TO DI-27
12	2	19.509	0.31	1.96	0.60	0.19	1.18	7.0	11.6	2.0	2.31	18.74	4.22	15	7.18	153.68	155.08	154.22	155.69	158.47	158.63	DI-6 TO DI-5
13	12	92.442	0.32	1.65	0.60	0.19	0.99	7.0	10.8	2.0	2.02	9.79	3.58	15	1.96	155.08	156.89	155.69	157.46	158.63	159.92	DI-5 TO DI-4
14	13	89.710	0.34	1.33	0.60	0.20	0.80	7.0	10.2	2.1	1.68	4.80	4.37	12	1.55	157.01	158.40	157.46	158.95	159.92	162.31	DI-4 TO DI-3
15	14	96.541	0.38	0.99	0.60	0.23	0.59	7.0	8.9	2.3	1.35	10.80	2.66	15	2.38	158.28	160.58	158.95	161.04	162.31	163.98	DI-3 TO DI-2
16	15	84.826	0.61	0.61	0.60	0.37	0.37	7.0	7.0	2.6	0.94	4.86	2.64	15	0.48	160.58	160.99	161.04	161.37	163.98	166.40	DI-2 TO DI-1
17	7	251.000	0.81	0.81	0.60	0.49	0.49	7.0	7.0	2.6	1.24	11.91	4.75	15	2.90	160.45	167.72	160.72	168.16	167.09	174.79	DI-30 TO DI-29
18	2	85.209	0.32	0.64	0.60	0.19	0.38	7.0	10.6	2.1	0.79	7.88	1.78	15	1.27	153.17	154.25	154.22	154.60	158.47	159.08	DI-6 TO DI-7
19	18	87.124	0.32	0.32	0.60	0.19	0.19	7.0	7.0	2.6	0.49	5.19	2.12	15	0.55	154.25	154.73	154.60	155.00	159.08	160.31	DI-7 TO DI-8
20	4	6.335	0.57	0.57	0.90	0.51	0.51	7.0	7.0	2.6	1.32	6.81	3.79	15	0.95	154.16	154.22	154.53	154.67	160.10	160.39	SDMH-4 TO CB-5
21	4	32.335	3.27	3.27	0.75	2.45	2.45	7.0	7.0	2.6	6.28	6.96	6.16	15	0.99	154.16	154.48	155.09	155.49	160.10	160.39	SDMH-4 TO CB-6
22	End	166.000	0.00	6.43	0.00	0.00	4.52	0.0	17.4	1.6	7.18	12.33	4.06	18	1.17	142.82	144.77	146.46	147.12	149.92	150.79	EX-SD TO SDMH-1
23	22	4.696	0.12	1.47	0.90	0.11	0.92	7.0	14.2	1.8	1.62	3.23	1.32	15	0.21	144.77	144.78	147.38	147.38	150.79	152.53	SDMH-1 TO CB-1
24	23	24.602	0.39	1.35	0.60	0.23	0.81	7.0	13.9	1.8	1.45	19.08	1.49	15	7.44	144.78	146.61	147.40	147.39	152.53	152.75	CB-1 TO DI-12
25	24	102.741	0.32	0.96	0.60	0.19	0.58	7.0	12.4	1.9	1.09	4.93	2.20	15	0.50	146.61	147.12	147.42	147.53	152.75	153.49	DI-12-DI-11
26	25	86.845	0.32	0.64	0.60	0.19	0.38	7.0	10.5	2.1	0.79	15.64	2.55	15	5.00	147.12	151.46	147.53	151.81	153.49	156.75	DI-11 TO DI-10
27	26	85.024	0.32	0.32	0.60	0.19	0.19	7.0	7.0	2.6	0.49	14.19	3.94	15	4.12	152.46	155.96	152.62	156.23	156.75	160.54	DI-9 TO DI-8
28	22	73.000	0.00	3.10	0.00	0.00	2.36	0.0	7.9	2.4	5.69	16.14	3.38	18	2.01	144.77	146.24	147.38	147.52	150.79	152.44	SDMH-1 TO NODE

Project File: Jensen Lane 10 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

NOTES:Intensity = 7.22 / (Inlet time + 0.10) ^ 0.53; Return period =Yrs. 10 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
29	28	94.000	0.00	3.10	0.00	0.00	2.36	0.0	7.4	2.5	5.88	16.22	4.33	18	2.03	146.24	148.15	147.55	149.09	152.44	153.54	NODE TO SDMH-2
30	29	37.392	0.26	3.10	0.90	0.23	2.36	7.0	7.2	2.5	5.96	11.32	5.12	18	0.99	148.15	148.52	149.09	149.46	153.54	153.34	SDMH-2 TO CB-3
31	30	38.676	2.84	2.84	0.75	2.13	2.13	7.0	7.0	2.6	5.45	11.42	4.80	18	1.01	148.52	148.91	149.46	149.81	153.34	153.34	CB-3 TO CB-4
32	22	31.221	0.39	1.86	0.90	0.35	1.23	7.0	17.1	1.6	1.98	5.01	1.61	15	0.51	144.77	144.93	147.38	147.40	150.79	156.95	SDMH-1 TO CB-2
33	32	132.326	0.47	1.47	0.60	0.28	0.88	7.0	15.7	1.7	1.48	4.94	1.20	15	0.50	144.93	145.59	147.42	147.48	156.95	152.01	CB-2 TO DI-13
34	33	215.088	0.33	1.00	0.60	0.20	0.60	7.0	12.6	1.9	1.13	4.96	1.06	15	0.50	145.59	146.67	147.52	147.57	152.01	153.09	DI-13 TO DI-14
35	34	112.444	0.25	0.67	0.60	0.15	0.40	0.0	10.3	2.1	0.84	4.94	1.88	15	0.50	146.67	147.23	147.58	147.59	153.09	153.65	DI-14-DI-15
36	35	103.306	0.42	0.42	0.60	0.25	0.25	7.0	7.0	2.6	0.65	4.96	2.44	15	0.50	147.23	147.75	147.59	148.06	153.65	154.16	DI-15 TO DI-16

Project File: Jensen Lane 10 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

NOTES:Intensity = 7.22 / (Inlet time + 0.10) ^ 0.53; Return period =Yrs. 10 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	16.24	147.91	153.96	3.00	7.07	2.30	0.08	154.04	0.051	237.000	150.91	154.08	3.00	7.07	2.30	0.08	154.16	0.051	0.051	0.120	0.15	0.01
2	36	16.27	150.91	154.09	3.00	7.07	2.30	0.08	154.17	0.051	11.000	151.13	154.10	2.97	7.06	2.31	0.08	154.18	0.047	0.049	0.005	1.50	0.12
3	36	14.23	151.13	154.22	3.00	2.64	2.01	0.06	154.28	0.039	158.075	153.00	154.20 j	1.20**	2.64	5.38	0.45	154.65	0.341	0.190	n/a	1.00	n/a
4	36	14.37	153.00	154.20	1.20	2.64	5.44	0.45	154.65	0.000	49.043	153.25	154.46	1.21**	2.66	5.40	0.45	154.91	0.000	0.000	n/a	1.00	0.45
5	36	10.14	153.25	154.46	1.21	2.08	3.81	0.37	154.83	0.000	43.515	154.00	155.01 j	1.01**	2.08	4.87	0.37	155.38	0.000	0.000	n/a	1.00	0.37
6	36	10.28	154.00	155.01	1.01	2.08	4.94	0.37	155.38	0.000	47.000	154.74	155.75	1.01**	2.10	4.89	0.37	156.13	0.000	0.000	n/a	0.50	n/a
7	36	10.68	154.74	155.75	1.01	2.10	5.08	0.38	156.13	0.000	158.859	159.48	160.51	1.03**	2.16	4.94	0.38	160.89	0.000	0.000	n/a	2.25	n/a
8	36	8.61	159.48	160.51	1.03	1.85	3.98	0.34	160.85	0.000	181.808	163.61	164.54 j	0.93**	1.85	4.65	0.34	164.87	0.000	0.000	n/a	0.28	0.09
9	36	8.68	164.00	164.54	0.54	0.85	10.17	0.34	164.87	0.000	17.501	168.10	169.03	0.93**	1.86	4.66	0.34	169.37	0.000	0.000	n/a	1.00	0.34
10	15	2.41	162.10	162.53	0.43*	0.37	6.46	0.24	162.77	0.000	37.415	162.79	163.41	0.62**	0.61	3.96	0.24	163.66	0.000	0.000	n/a	0.50	n/a
11	15	1.47	162.79	163.41	0.62	0.43	2.42	0.18	163.59	0.000	280.775	170.87	171.35 j	0.48**	0.43	3.40	0.18	171.53	0.000	0.000	n/a	1.00	n/a
12	15	2.31	153.68	154.22	0.54	0.51	4.53	0.24	154.46	0.000	19.509	155.08	155.69	0.61**	0.59	3.91	0.24	155.92	0.000	0.000	n/a	0.50	n/a
13	15	2.02	155.08	155.69	0.61	0.54	3.42	0.22	155.90	0.000	92.442	156.89	157.46 j	0.57**	0.54	3.74	0.22	157.67	0.000	0.000	n/a	0.50	n/a
14	12	1.68	157.01	157.46	0.45	0.34	4.96	0.22	157.68	0.000	89.710	158.40	158.95	0.55**	0.44	3.79	0.22	159.17	0.000	0.000	n/a	0.50	n/a
15	15	1.35	158.28	158.95	0.67	0.41	2.01	0.17	159.12	0.000	96.541	160.58	161.04 j	0.46**	0.41	3.30	0.17	161.21	0.000	0.000	n/a	0.50	n/a
16	15	0.94	160.58	161.04	0.46	0.32	2.30	0.14	161.18	0.000	84.826	160.99	161.37	0.38**	0.32	2.97	0.14	161.51	0.000	0.000	n/a	1.00	n/a
17	15	1.24	160.45	160.72	0.27*	0.20	6.28	0.16	160.88	0.000	251.000	167.72	168.16	0.44**	0.39	3.23	0.16	168.32	0.000	0.000	n/a	1.00	n/a
18	15	0.79	153.17	154.22	1.05	0.28	0.72	0.12	154.35	0.000	85.209	154.25	154.60 j	0.35**	0.28	2.83	0.12	154.72	0.000	0.000	n/a	0.50	n/a
19	15	0.49	154.25	154.60	0.35	0.20	1.76	0.10	154.69	0.000	87.124	154.73	155.00 j	0.27**	0.20	2.48	0.10	155.10	0.000	0.000	n/a	1.00	0.10
20	15	1.32	154.16	154.53	0.37*	0.31	4.29	0.17	154.70	0.000	6.335	154.22	154.67	0.45**	0.40	3.29	0.17	154.84	0.000	0.000	n/a	1.00	0.17
21	15	6.28	154.16	155.09	0.93*	0.98	6.42	0.54	155.63	0.000	32.335	154.48	155.49	1.01**	1.06	5.91	0.54	156.03	0.000	0.000	n/a	1.00	0.54
22	18	7.18	142.82	146.46	1.50	1.77	4.06	0.26	146.72	0.399	166.000	144.77	147.12	1.50	1.77	4.06	0.26	147.38	0.398	0.398	0.661	1.00	0.26
23	15	1.62	144.77	147.38	1.25	1.23	1.32	0.03	147.41	0.054	4.696	144.78	147.38	1.25	1.23	1.32	0.03	147.41	0.054	0.054	0.003	0.72	0.02
24	15	1.45	144.78	147.40	1.25	1.23	1.18	0.02	147.42	0.043	24.602	146.61	147.39	0.78	0.80	1.80	0.05	147.44	0.085	0.064	0.016	0.70	0.04
25	15	1.09	146.61	147.42	0.81	0.35	1.29	0.15	147.57	0.000	102.741	147.12	147.53 j	0.41**	0.35	3.11	0.15	147.68	0.000	0.000	n/a	0.50	n/a
26	15	0.79	147.12	147.53	0.41	0.28	2.26	0.13	147.66	0.000	86.845	151.46	151.81 j	0.35**	0.28	2.84	0.13	151.93	0.000	0.000	n/a	0.50	0.06
27	15	0.49	152.46	152.62	0.16*	0.09	5.40	0.10	152.72	0.000	85.024	155.96	156.23	0.27**	0.20	2.48	0.10	156.33	0.000	0.000	n/a	1.00	0.10
28	18	5.69	144.77	147.38	1.50	1.77	3.22	0.16	147.54	0.251	73.000	146.24	147.52	1.28	1.61	3.54	0.19	147.72	0.234	0.242	0.177	0.15	0.03

Project File: Jensen Lane 10 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)		Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)		
	(in)	(cfs)									(ft)											(K)	(ft)
29	18	5.88	146.24	147.55	1.31	1.16	3.59	0.40	147.95	0.000	94.000	148.15	149.09 j	0.94**	1.16	5.07	0.40	149.49	0.000	0.000	n/a	1.00	n/a
30	18	5.96	148.15	149.09	0.94	1.16	5.14	0.40	149.49	0.000	37.392	148.52	149.46	0.94**	1.17	5.10	0.40	149.87	0.000	0.000	n/a	1.50	n/a
31	18	5.45	148.52	149.46	0.94	1.11	4.67	0.38	149.84	0.000	38.676	148.91	149.81 j	0.90**	1.11	4.93	0.38	150.19	0.000	0.000	n/a	1.00	n/a
32	15	1.98	144.77	147.38	1.25	1.23	1.61	0.04	147.42	0.080	31.221	144.93	147.40	1.25	1.23	1.61	0.04	147.44	0.080	0.080	0.025	0.50	0.02
33	15	1.48	144.93	147.42	1.25	1.23	1.20	0.02	147.45	0.045	132.326	145.59	147.48	1.25	1.23	1.20	0.02	147.50	0.045	0.045	0.059	1.50	0.03
34	15	1.13	145.59	147.52	1.25	1.23	0.92	0.01	147.53	0.026	215.088	146.67	147.57	0.90	0.95	1.19	0.02	147.59	0.034	0.030	0.065	0.50	0.01
35	15	0.84	146.67	147.58	0.91	0.29	0.88	0.13	147.71	0.000	112.444	147.23	147.59	0.36**	0.29	2.88	0.13	147.72	0.000	0.000	n/a	0.50	n/a
36	15	0.65	147.23	147.59	0.36	0.24	2.21	0.11	147.70	0.000	103.306	147.75	148.06 j	0.31**	0.24	2.68	0.11	148.17	0.000	0.000	n/a	1.00	n/a

Project File: Jensen Lane 10 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
1	OUT EX-36 TO NODE	23.95	36	Cir	237.000	147.91	150.91	1.266	154.66*	154.92*	0.03	154.95	End	None
2	NODE -DI-6	23.98	36	Cir	11.000	150.91	151.13	2.000	154.95*	154.96*	0.27	155.23	1	DropGrate
3	DI-6 TO SDMH-3	20.84	36	Cir	158.075	151.13	153.00	1.183	155.23	155.31	0.20	155.50	2	Manhole
4	SDMH-3 TO SDMH-4	20.99	36	Cir	49.043	153.00	153.25	0.510	155.50	154.72	n/a	154.72	3	Manhole
5	SDMH-4 TO SDMH-5	14.78	36	Cir	43.515	153.25	154.00	1.724	154.72	155.22	n/a	155.22 j	4	Manhole
6	SDMH-5 TO DI-30	14.94	36	Cir	47.000	154.00	154.74	1.574	155.22	155.97	n/a	155.97	5	DropGrate
7	DI-31 TO DI-30	15.34	36	Cir	158.859	154.74	159.48	2.984	155.97	160.73	1.06	160.73	6	DropGrate
8	DI-30 TO SDMH-6	12.11	36	Cir	181.808	159.48	163.61	2.272	160.73	164.71	n/a	164.71 j	7	Manhole
9	SDMH-6 TO HW-1	12.18	36	Cir	17.501	164.00	168.10	23.427	164.71	169.21	n/a	169.21	8	OpenHeadwall
10	DI-30 TO DI-28	3.58	15	Cir	37.415	162.10	162.79	1.844	162.63	163.55	n/a	163.55	7	DropGrate
11	DI-28 TO DI-27	2.07	15	Cir	280.775	162.79	170.87	2.878	163.55	171.44	n/a	171.44 j	10	DropGrate
12	DI-6 TO DI-5	3.45	15	Cir	19.509	153.68	155.08	7.176	155.23	155.83	n/a	155.83 j	2	DropGrate
13	DI-5 TO DI-4	2.99	15	Cir	92.442	155.08	156.89	1.958	155.83	157.59	n/a	157.59 j	12	DropGrate
14	DI-4 TO DI-3	2.47	12	Cir	89.710	157.01	158.40	1.549	157.59	159.07	n/a	159.07	13	DropGrate
15	DI-3 TO DI-2	1.95	15	Cir	96.541	158.28	160.58	2.382	159.07	161.14	n/a	161.14 j	14	DropGrate
16	DI-2 TO DI-1	1.31	15	Cir	84.826	160.58	160.99	0.483	161.14	161.44	n/a	161.44 j	15	DropGrate
17	DI-30 TO DI-29	1.75	15	Cir	251.000	160.45	167.72	2.896	160.77	168.24	n/a	168.24	7	DropGrate
18	DI-6 TO DI-7	1.17	15	Cir	85.209	153.17	154.25	1.267	155.23	155.25	0.01	155.26	2	DropGrate
19	DI-7 TO DI-8	0.69	15	Cir	87.124	154.25	154.73	0.551	155.26	155.05	0.12	155.05	18	DropGrate
20	SDMH-4 TO CB-5	1.85	15	Cir	6.335	154.16	154.22	0.947	154.72	154.76	0.21	154.76	4	Curb-
21	SDMH-4 TO CB-6	8.81	15	Cir	32.335	154.16	154.48	0.990	155.41*	155.92*	0.80	156.72	4	Curb-
22	EX-SD TO SDMH-1	11.12	18	Cir	166.000	142.82	144.77	1.175	147.16*	148.75*	0.62	149.36	End	Manhole
23	SDMH-1 TO CB-1	2.47	15	Cir	4.696	144.77	144.78	0.213	149.36*	149.37*	0.05	149.41	22	Curb-
24	CB-1 TO DI-12	2.20	15	Cir	24.602	144.78	146.61	7.438	149.41*	149.44*	0.03	149.47	23	DropGrate
25	DI-12-DI-11	1.64	15	Cir	102.741	146.61	147.12	0.496	149.47*	149.53*	0.01	149.54	24	DropGrate
26	DI-11 TO DI-10	1.17	15	Cir	86.845	147.12	151.46	4.997	149.54	151.89	n/a	151.89 j	25	DropGrate
27	DI-9 TO DI-8	0.69	15	Cir	85.024	152.46	155.96	4.116	152.65	156.28	0.12	156.28	26	DropGrate
28	SDMH-1 TO NODE	8.12	18	Cir	73.000	144.77	146.24	2.014	149.36*	149.73*	0.05	149.78	22	None
29	NODE TO SDMH-2	8.32	18	Cir	94.000	146.24	148.15	2.032	149.78*	150.28*	0.34	150.63	28	Manhole
30	SDMH-2 TO CB-3	8.40	18	Cir	37.392	148.15	148.52	0.990	150.63*	150.83*	0.53	151.36	29	Curb-
31	CB-3 TO CB-4	7.65	18	Cir	38.676	148.52	148.91	1.008	151.36*	151.53*	0.29	151.83	30	Curb-

Project File: Jensen Lane 100 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

NOTES: Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line Size (in)	Line shape	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line Slope (%)	HGL Down (ft)	HGL Up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns Line No.	Junction Type
32	SDMH-1 TO CB-2	3.06	15	Cir	31.221	144.77	144.93	0.512	149.36*	149.42*	0.05	149.47	22	Curb-
33	CB-2 TO DI-13	2.27	15	Cir	132.326	144.93	145.59	0.499	149.47*	149.61*	0.08	149.69	32	DropGrate
34	DI-13 TO DI-14	1.70	15	Cir	215.088	145.59	146.67	0.502	149.69*	149.81*	0.01	149.83	33	DropGrate
35	DI-14-DI-15	1.24	15	Cir	112.444	146.67	147.23	0.498	149.83*	149.87*	0.01	149.87	34	DropGrate
36	DI-15 TO DI-16	0.90	15	Cir	103.306	147.23	147.75	0.503	149.87*	149.89*	0.01	149.90	35	DropGrate

Project File: Jensen Lane 100 Yrs.stm	Number of lines: 36	Run Date: 7/7/2020

NOTES: Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
1	End	237.000	0.00	21.78	0.00	0.00	11.56	0.0	20.0	2.1	23.95	81.29	3.39	36	1.27	147.91	150.91	154.66	154.92	151.99	154.70	OUT EX-36 TO NODE
2	1	11.000	0.31	21.78	0.60	0.19	11.56	7.0	19.9	2.1	23.98	102.2	3.39	36	2.00	150.91	151.13	154.95	154.96	154.70	158.47	NODE -DI-6
3	2	158.075	0.00	18.87	0.00	0.00	9.82	0.0	19.1	2.1	20.84	78.58	3.26	36	1.18	151.13	153.00	155.23	155.31	158.47	161.13	DI-6 TO SDMH-3
4	3	49.043	0.00	18.87	0.00	0.00	9.82	0.0	18.8	2.1	20.99	51.59	4.71	36	0.51	153.00	153.25	155.50	154.72	161.13	160.10	SDMH-3 TO SDMH-4
5	4	43.515	0.00	15.03	0.00	0.00	6.85	0.0	18.5	2.2	14.78	94.85	4.87	36	1.72	153.25	154.00	154.72	155.22	160.10	161.11	SDMH-4 TO SDMH-5
6	5	47.000	0.10	15.03	0.60	0.06	6.85	7.0	18.1	2.2	14.94	90.66	5.49	36	1.57	154.00	154.74	155.22	155.97	161.11	162.27	SDMH-5 TO DI-30
7	6	158.859	0.10	14.93	0.60	0.06	6.79	7.0	16.9	2.3	15.34	124.8	5.56	36	2.98	154.74	159.48	155.97	160.73	162.27	167.09	DI-31 TO DI-30
8	7	181.808	0.00	12.04	0.00	0.00	5.06	0.0	15.2	2.4	12.11	108.9	4.74	36	2.27	159.48	163.61	160.73	164.71	167.09	172.42	DI-30 TO SDMH-6
9	8	17.501	12.04	12.04	0.42	5.06	5.06	15.0	15.0	2.4	12.18	349.7	7.29	36	23.43	164.00	168.10	164.71	169.21	172.42	171.89	SDMH-6 TO HW-1
10	7	37.415	1.02	1.98	0.60	0.61	1.19	7.0	9.8	3.0	3.58	9.50	5.88	15	1.84	162.10	162.79	162.63	163.55	167.09	167.18	DI-30 TO DI-28
11	10	280.775	0.96	0.96	0.60	0.58	0.58	7.0	7.0	3.6	2.07	11.87	3.20	15	2.88	162.79	170.87	163.55	171.44	167.18	174.66	DI-28 TO DI-27
12	2	19.509	0.31	1.96	0.60	0.19	1.18	7.0	10.3	2.9	3.45	18.74	3.65	15	7.18	153.68	155.08	155.23	155.83	158.47	158.63	DI-6 TO DI-5
13	12	92.442	0.32	1.65	0.60	0.19	0.99	7.0	9.7	3.0	2.99	9.79	4.09	15	1.96	155.08	156.89	155.83	157.59	158.63	159.92	DI-5 TO DI-4
14	13	89.710	0.34	1.33	0.60	0.20	0.80	7.0	9.3	3.1	2.47	4.80	4.84	12	1.55	157.01	158.40	157.59	159.07	159.92	162.31	DI-4 TO DI-3
15	14	96.541	0.38	0.99	0.60	0.23	0.59	7.0	8.3	3.3	1.95	10.80	3.04	15	2.38	158.28	160.58	159.07	161.14	162.31	163.98	DI-3 TO DI-2
16	15	84.826	0.61	0.61	0.60	0.37	0.37	7.0	7.0	3.6	1.31	4.86	2.89	15	0.48	160.58	160.99	161.14	161.44	163.98	166.40	DI-2 TO DI-1
17	7	251.000	0.81	0.81	0.60	0.49	0.49	7.0	7.0	3.6	1.75	11.91	5.25	15	2.90	160.45	167.72	160.77	168.24	167.09	174.79	DI-30 TO DI-29
18	2	85.209	0.32	0.64	0.60	0.19	0.38	7.0	9.6	3.0	1.17	7.88	1.03	15	1.27	153.17	154.25	155.23	155.25	158.47	159.08	DI-6 TO DI-7
19	18	87.124	0.32	0.32	0.60	0.19	0.19	7.0	7.0	3.6	0.69	5.19	1.69	15	0.55	154.25	154.73	155.26	155.05	159.08	160.31	DI-7 TO DI-8
20	4	6.335	0.57	0.57	0.90	0.51	0.51	7.0	7.0	3.6	1.85	6.81	3.56	15	0.95	154.16	154.22	154.72	154.76	160.10	160.39	SDMH-4 TO CB-5
21	4	32.335	3.27	3.27	0.75	2.45	2.45	7.0	7.0	3.6	8.81	6.96	7.18	15	0.99	154.16	154.48	155.41	155.92	160.10	160.39	SDMH-4 TO CB-6
22	End	166.000	0.00	6.43	0.00	0.00	4.52	0.0	14.4	2.5	11.12	12.33	6.29	18	1.17	142.82	144.77	147.16	148.75	149.92	150.79	EX-SD TO SDMH-1
23	22	4.696	0.12	1.47	0.90	0.11	0.92	7.0	12.1	2.7	2.47	3.23	2.01	15	0.21	144.77	144.78	149.36	149.37	150.79	152.53	SDMH-1 TO CB-1
24	23	24.602	0.39	1.35	0.60	0.23	0.81	7.0	11.9	2.7	2.20	19.08	1.79	15	7.44	144.78	146.61	149.41	149.44	152.53	152.75	CB-1 TO DI-12
25	24	102.741	0.32	0.96	0.60	0.19	0.58	7.0	10.9	2.9	1.64	4.93	1.34	15	0.50	146.61	147.12	149.47	149.53	152.75	153.49	DI-12-DI-11
26	25	86.845	0.32	0.64	0.60	0.19	0.38	7.0	9.5	3.1	1.17	15.64	2.06	15	5.00	147.12	151.46	149.54	151.89	153.49	156.75	DI-11 TO DI-10
27	26	85.024	0.32	0.32	0.60	0.19	0.19	7.0	7.0	3.6	0.69	14.19	4.35	15	4.12	152.46	155.96	152.65	156.28	156.75	160.54	DI-9 TO DI-8
28	22	73.000	0.00	3.10	0.00	0.00	2.36	0.0	7.6	3.4	8.12	16.14	4.60	18	2.01	144.77	146.24	149.36	149.73	150.79	152.44	SDMH-1 TO NODE

Max HGL

Project File: Jensen Lane 100 Yrs.stm

Number of lines: 36

Run Date: 7/7/2020

NOTES:Intensity = 10.13 / (Inlet time + 0.10) ^ 0.53; Return period =Yrs. 100 ; c = cir e = ellip b = box

Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	
29	28	94.000	0.00	3.10	0.00	0.00	2.36	0.0	7.3	3.5	8.32	16.22	4.71	18	2.03	146.24	148.15	149.78	150.28	152.44	153.54	NODE TO SDMH-2
30	29	37.392	0.26	3.10	0.90	0.23	2.36	7.0	7.1	3.6	8.40	11.32	4.75	18	0.99	148.15	148.52	150.63	150.83	153.54	153.34	SDMH-2 TO CB-3
31	30	38.676	2.84	2.84	0.75	2.13	2.13	7.0	7.0	3.6	7.65	11.42	4.33	18	1.01	148.52	148.91	151.36	151.53	153.34	153.34	CB-3 TO CB-4
32	22	31.221	0.39	1.86	0.90	0.35	1.23	7.0	14.2	2.5	3.06	5.01	2.49	15	0.51	144.77	144.93	149.36	149.42	150.79	156.95	SDMH-1 TO CB-2
33	32	132.326	0.47	1.47	0.60	0.28	0.88	7.0	13.2	2.6	2.27	4.94	1.85	15	0.50	144.93	145.59	149.47	149.61	156.95	152.01	CB-2 TO DI-13
34	33	215.088	0.33	1.00	0.60	0.20	0.60	7.0	11.0	2.8	1.70	4.96	1.39	15	0.50	145.59	146.67	149.69	149.81	152.01	153.09	DI-13 TO DI-14
35	34	112.444	0.25	0.67	0.60	0.15	0.40	0.0	9.3	3.1	1.24	4.94	1.01	15	0.50	146.67	147.23	149.83	149.87	153.09	153.65	DI-14-DI-15
36	35	103.306	0.42	0.42	0.60	0.25	0.25	7.0	7.0	3.6	0.90	4.96	0.74	15	0.50	147.23	147.75	149.87	149.89	153.65	154.16	DI-15 TO DI-16

Project File: Jensen Lane 100 Yrs.stm

Number of lines: 36

Run Date: 7/7/2020

NOTES:Intensity = 10.13 / (Inlet time + 0.10) ^ 0.53; Return period =Yrs. 100 ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	23.95	147.91	154.66	3.00	7.07	3.39	0.18	154.84	0.110	237.000	150.91	154.92	3.00	7.07	3.39	0.18	155.10	0.110	0.110	0.260	0.15	0.03
2	36	23.98	150.91	154.95	3.00	7.07	3.39	0.18	155.13	0.110	11.000	151.13	154.96	3.00	7.07	3.39	0.18	155.14	0.110	0.110	0.012	1.50	0.27
3	36	20.84	151.13	155.23	3.00	7.07	2.95	0.14	155.36	0.083	158.075	153.00	155.31	2.31	5.83	3.58	0.20	155.50	0.095	0.089	0.141	1.00	0.20
4	36	20.99	153.00	155.50	2.50	3.45	3.33	0.58	156.08	0.000	49.043	153.25	154.72	1.47**	3.45	6.09	0.58	155.30	0.000	0.000	n/a	1.00	n/a
5	36	14.78	153.25	154.72	1.47	2.71	4.29	0.46	155.18	0.000	43.515	154.00	155.22 j	1.22**	2.71	5.45	0.46	155.69	0.000	0.000	n/a	1.00	n/a
6	36	14.94	154.00	155.22	1.22	2.71	5.51	0.46	155.69	0.000	47.000	154.74	155.97	1.23**	2.73	5.47	0.46	156.44	0.000	0.000	n/a	0.50	n/a
7	36	15.34	154.74	155.97	1.23	2.73	5.62	0.47	156.44	0.000	158.859	159.48	160.73	1.25**	2.78	5.51	0.47	161.20	0.000	0.000	n/a	2.25	1.06
8	36	12.11	159.48	160.73	1.25	2.36	4.35	0.41	161.14	0.000	181.808	163.61	164.71 j	1.10**	2.36	5.13	0.41	165.12	0.000	0.000	n/a	0.28	n/a
9	36	12.18	164.00	164.71	0.71	1.29	9.45	0.41	165.12	0.000	17.501	168.10	169.21	1.11**	2.37	5.14	0.41	169.62	0.000	0.000	n/a	1.00	n/a
10	15	3.58	162.10	162.63	0.53*	0.50	7.20	0.32	162.96	0.000	37.415	162.79	163.55	0.76**	0.79	4.56	0.32	163.88	0.000	0.000	n/a	0.50	n/a
11	15	2.07	162.79	163.55	0.76	0.55	2.63	0.22	163.77	0.000	280.775	170.87	171.44 j	0.57**	0.55	3.77	0.22	171.66	0.000	0.000	n/a	1.00	n/a
12	15	3.45	153.68	155.23	1.25	0.77	2.81	0.12	155.35	0.243	19.509	155.08	155.83 j	0.75**	0.77	4.50	0.31	156.14	0.541	0.392	n/a	0.50	n/a
13	15	2.99	155.08	155.83	0.75	0.70	3.90	0.28	156.11	0.000	92.442	156.89	157.59 j	0.70**	0.70	4.27	0.28	157.87	0.000	0.000	n/a	0.50	n/a
14	12	2.47	157.01	157.59	0.58	0.47	5.29	0.30	157.89	0.000	89.710	158.40	159.07	0.67**	0.56	4.40	0.30	159.37	0.000	0.000	n/a	0.50	n/a
15	15	1.95	158.28	159.07	0.79	0.53	2.37	0.21	159.29	0.000	96.541	160.58	161.14 j	0.56**	0.53	3.70	0.21	161.35	0.000	0.000	n/a	0.50	0.11
16	15	1.31	160.58	161.14	0.56	0.40	2.50	0.17	161.30	0.000	84.826	160.99	161.44 j	0.45**	0.40	3.28	0.17	161.61	0.000	0.000	n/a	1.00	n/a
17	15	1.75	160.45	160.77	0.32*	0.25	6.93	0.20	160.97	0.000	251.000	167.72	168.24	0.52**	0.49	3.57	0.20	168.44	0.000	0.000	n/a	1.00	n/a
18	15	1.17	153.17	155.23	1.25	1.23	0.95	0.01	155.24	0.028	85.209	154.25	155.25	1.00	1.05	1.12	0.02	155.27	0.029	0.029	0.024	0.50	0.01
19	15	0.69	154.25	155.26	1.01	0.25	0.65	0.12	155.37	0.000	87.124	154.73	155.05	0.32**	0.25	2.73	0.12	155.17	0.000	0.000	n/a	1.00	0.12
20	15	1.85	154.16	154.72	0.56	0.51	3.47	0.21	154.93	0.000	6.335	154.22	154.76	0.54**	0.51	3.64	0.21	154.97	0.000	0.000	n/a	1.00	0.21
21	15	8.81	154.16	155.41	1.25*	1.23	7.18	0.80	156.21	1.585	32.335	154.48	155.92	1.25	1.23	7.18	0.80	156.72	1.585	1.585	0.512	1.00	0.80
22	18	11.12	142.82	147.16	1.50	1.77	6.29	0.62	147.78	0.955	166.000	144.77	148.75	1.50	1.77	6.29	0.62	149.36	0.955	0.955	1.585	1.00	0.62
23	15	2.47	144.77	149.36	1.25	1.23	2.01	0.06	149.42	0.125	4.696	144.78	149.37	1.25	1.23	2.01	0.06	149.43	0.125	0.125	0.006	0.72	0.05
24	15	2.20	144.78	149.41	1.25	1.23	1.79	0.05	149.46	0.099	24.602	146.61	149.44	1.25	1.23	1.79	0.05	149.49	0.099	0.099	0.024	0.70	0.03
25	15	1.64	146.61	149.47	1.25	1.23	1.34	0.03	149.50	0.055	102.741	147.12	149.53	1.25	1.23	1.34	0.03	149.56	0.055	0.055	0.057	0.50	0.01
26	15	1.17	147.12	149.54	1.25	0.37	0.96	0.01	149.56	0.028	86.845	151.46	151.89 j	0.43**	0.37	3.17	0.16	152.04	0.448	0.238	n/a	0.50	0.08
27	15	0.69	152.46	152.65	0.19*	0.12	5.97	0.12	152.76	0.000	85.024	155.96	156.28	0.32**	0.25	2.73	0.12	156.40	0.000	0.000	n/a	1.00	0.12
28	18	8.12	144.77	149.36	1.50	1.77	4.60	0.33	149.69	0.510	73.000	146.24	149.73	1.50	1.77	4.60	0.33	150.06	0.510	0.510	0.372	0.15	0.05

Project File: Jensen Lane 100 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
29	18	8.32	146.24	149.78	1.50	1.77	4.71	0.34	150.13	0.535	94.000	148.15	150.28	1.50	1.77	4.71	0.34	150.63	0.534	0.534	0.502	1.00	0.34
30	18	8.40	148.15	150.63	1.50	1.77	4.75	0.35	150.98	0.545	37.392	148.52	150.83	1.50	1.77	4.75	0.35	151.18	0.545	0.545	0.204	1.50	0.53
31	18	7.65	148.52	151.36	1.50	1.77	4.33	0.29	151.65	0.452	38.676	148.91	151.53	1.50	1.77	4.33	0.29	151.83	0.452	0.452	0.175	1.00	0.29
32	15	3.06	144.77	149.36	1.25	1.23	2.49	0.10	149.46	0.191	31.221	144.93	149.42	1.25	1.23	2.49	0.10	149.52	0.191	0.191	0.060	0.50	0.05
33	15	2.27	144.93	149.47	1.25	1.23	1.85	0.05	149.52	0.105	132.326	145.59	149.61	1.25	1.23	1.85	0.05	149.66	0.105	0.105	0.139	1.50	0.08
34	15	1.70	145.59	149.69	1.25	1.23	1.39	0.03	149.72	0.059	215.088	146.67	149.81	1.25	1.23	1.39	0.03	149.84	0.059	0.059	0.127	0.50	0.01
35	15	1.24	146.67	149.83	1.25	1.23	1.01	0.02	149.85	0.032	112.444	147.23	149.87	1.25	1.23	1.01	0.02	149.88	0.032	0.032	0.035	0.50	0.01
36	15	0.90	147.23	149.87	1.25	1.23	0.74	0.01	149.88	0.017	103.306	147.75	149.89	1.25	1.23	0.74	0.01	149.90	0.017	0.017	0.017	1.00	0.01

Project File: Jensen Lane 100 Yrs.stm | Number of lines: 36 | Run Date: 7/7/2020

Notes: * depth assumed; ** Critical depth.; j-Line contains hyd. jump ; c = cir e = ellip b = box

point of connection
Ex 36" 234 ' long

point of connection
Ex 18" 165' Long

N 0° 17' 30" E 1318.72'

1" = 40'

VANCOUVER LANE

PROPOSED 15' PUBLIC SDE

RETAIN EXIST. VINEYARD

GEORGE PRINCE WAY

200' AGRICULTURAL SETBACK

858.28'

833.50'

N 89° 48' 00" E

N 89° 56' 23" E

EXIST. VINECREST RD.

& PROPOSED EXTENSION OF VINECREST RD.

ARBROK VALLEY ASSESSMENT DISTRICT

VICTORIA LANE

15' PROPOSED PRIVATE SD EASEMENT

LOT 13 BUILDING ENVELOPE
SEWER AND WATER EASEMENT

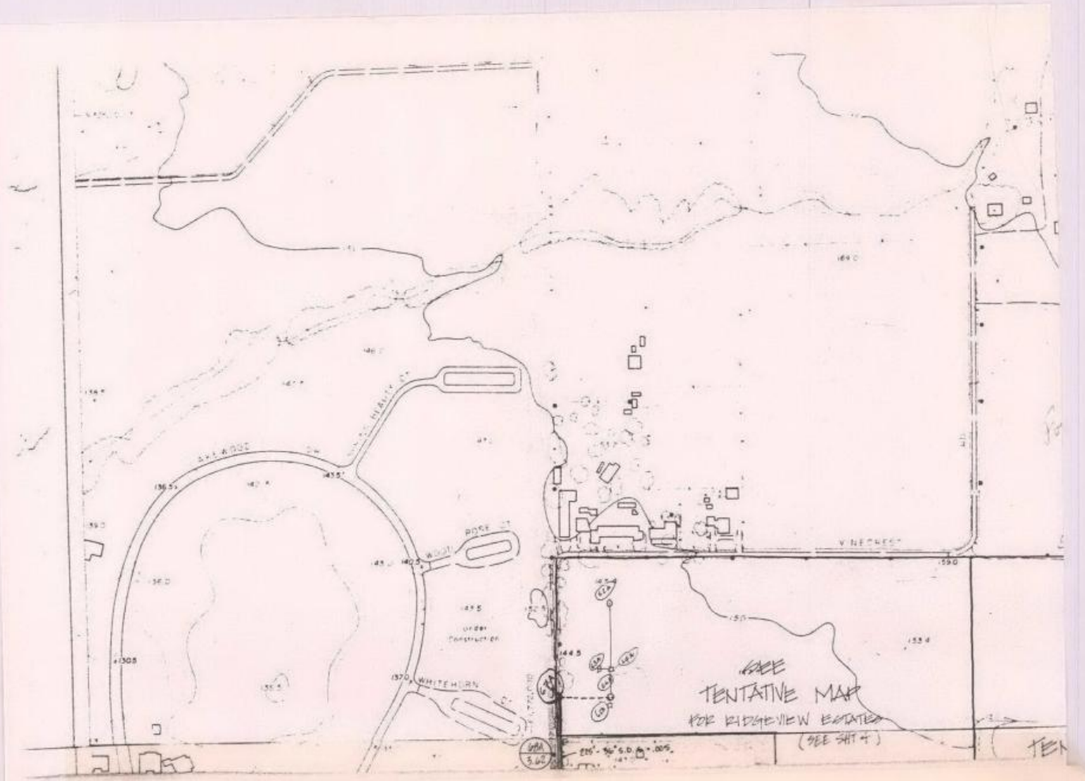
WATER, SEWER AND STORM DRAIN PER ASSESSMENT DISTRICT

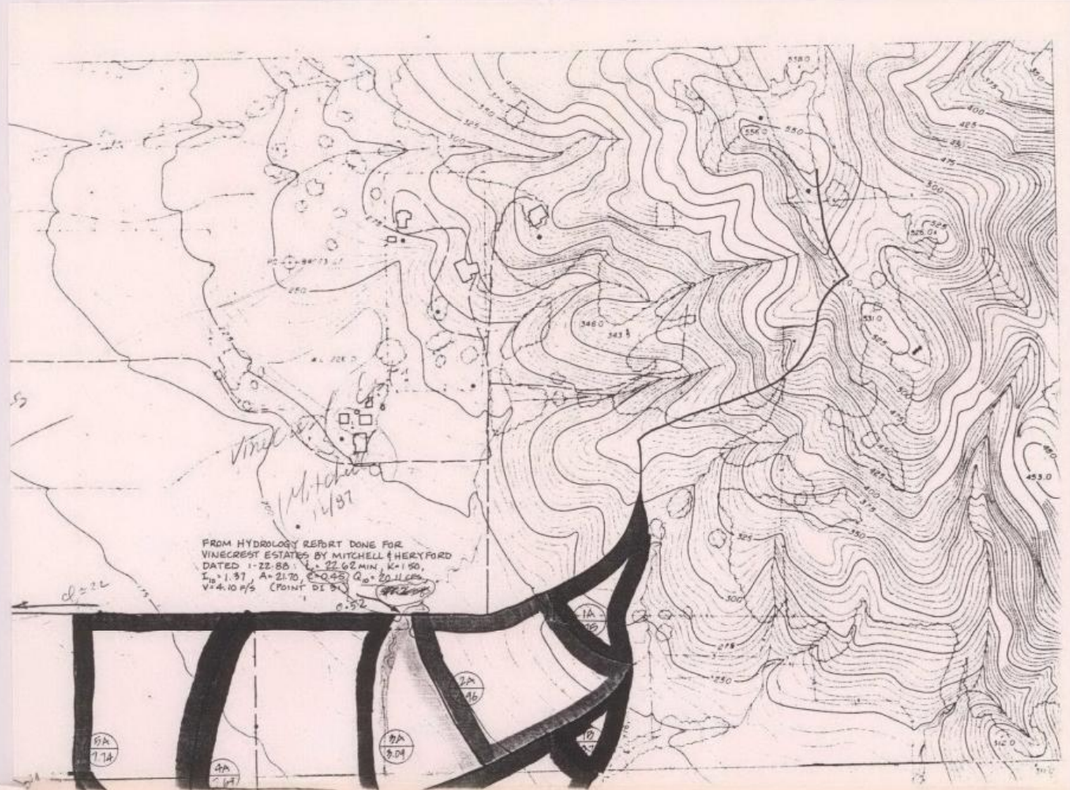
Vintage Hills Subd
8-8-7-5

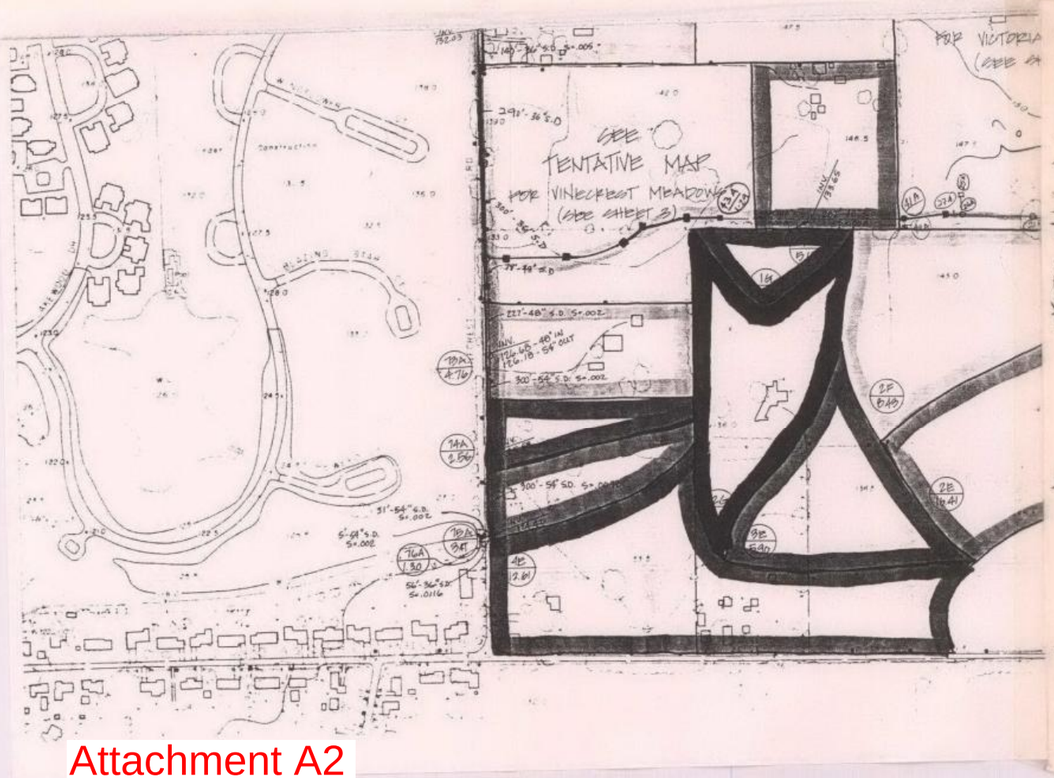
N 0° 47' 10" W 1316.70'

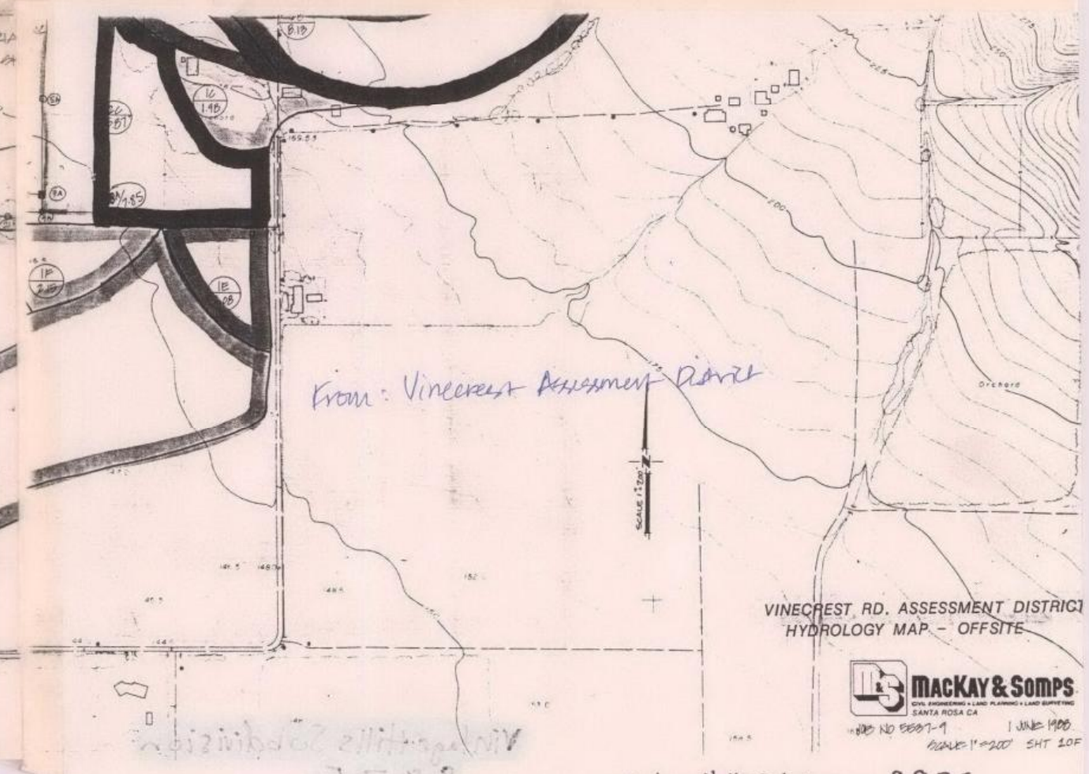
Attachment A1

VINECREST RD. ASSESSMENT DISTRICT
HYDROLOGY MAP (formerly VICTORIA PARK)
MacKAY & SOMPS
CIVIL ENGINEERING • LAND PLANNING • LAND SURVEYING
SANTA ROSA CA
JOB NO 5597-9 6/1/88
SCALE 1"=40'
SHT 2 OF 5









Attachment A2

RIDGEVIEW ESTATES

SCALE: 1"=50'

GRAPHIC SCALE 0 20 50 100

PROFILE "A"

PROFILE "B"

VICTORIA LANE

VANCOUVER

PRINCE GEORGE WAY

VINECREST ROAD

4.16 A

TOTAL = 0.38 Ac

TOTAL = 3.06 Ac

0.96 Ac

0.95 Ac

1.18 Ac

0.92 Ac

Total 3.34 Ac

Total 2.80 Ac

6.73 Ac

4.76 Ac

0.37 Ac

0.29 Ac

0.18 Ac

0.23 Ac

0.28 Ac

0.41 Ac

0.14 Ac

0.87 Ac

0.82 Ac

0.83 Ac

0.03 Ac

| | | |

Return Period 10 years

OPEN & CLOSED CONDUIT CALCULATIONS

Version 2.32 / 03

VINECREST A.D.

Job No. 5537-9
Designed By: JLW
Date: 06 07 1988

Mean Annual Rainfall 40
Roof to Gutter time = 10 minutes
Manning's "n"= .014
Line Al Hydrology Hydraulics

Pt. #	Area Des.	dA Acres	C	dCA	Sum A Acres	Sum CA	Time of Conc.	Rain- fall Iten.	Q CIA cfs	#	Dia. in.	Sf Sp	Len. Dn ft.	Vel. fps	Time min.	Hf= Sfxl ft.	Junt loss ft.	Bend loss ft.	E&C loss ft.	HGL	MTC= HGL+ 0.70	To Point	Plan TC-TG* F.L.	BW or OC
1	A	55.84	.48	26.96	55.84	26.96	26.0	1.28	45.9	1=36		0.0055	234	6.5	0.6	1.28	0.00	0.74	0.49	153.96	154.66		159.00	EC
												0.0140	1.72	10.9	0.4							4	151.01	
2	A	2.41	.45	1.08	2.41	1.08	10.0	2.11	3.0	1=18		0.0010	40	1.7	0.4	0.04	0.00	0.02	0.00	152.52	153.22		155.00	BW
												0.0100	0.58	4.9	0.1							3	149.78	
3	A	4.45	.45	2.00	6.86	3.09	10.4	2.07	8.5	1=18		0.0076	15	4.8	0.1	0.11	0.32	0.00	0.00	152.48	153.18		155.00	BW
												0.0100	1.10	6.2	0.0							4	149.38	
4	A	0.00	.45	0.00	62.70	30.05	26.4	1.27	50.7	1=36		0.0067	302	7.2	0.7	2.03	1.92	0.00	1.07	152.05	152.75		157.50	PM
												0.0070	2.40	8.4	0.6							5	147.73	
5	A	0.00	.45	0.00	62.70	30.05	27.0	1.25	50.7	1=36		0.0067	302	7.2	0.7	2.03	0.00	0.00	0.00	148.01	148.71		152.50	BW
												0.0120	1.93	10.5	0.5							7	145.62	
6	A	0.87	.45	0.39	0.87	0.39	10.0	2.11	1.1	1=18		0.0001	48	0.6	1.3	0.01	0.00	0.00	0.00	145.58	146.28		150.50	BW
												0.0100	0.34	3.7	0.2							7	143.98	
7	A	1.30	.45	0.59	64.87	31.02	27.7	1.23	51.1	1=42		0.0030	58	5.3	0.2	0.17	0.00	0.00	0.00	145.57	146.27		150.50	BW
												0.0100	1.85	9.9	0.1							9	141.50	
8	A	7.85	.45	3.53	7.85	3.53	15.8	1.66	7.8	1=18		0.0064	165	4.4	0.6	1.06	0.00	0.12	0.00	146.46	147.16		151.50	BW
												0.0100	1.02	6.1	0.4							9	144.77	
9	A	0.00	.45	0.00	72.72	34.56	27.8	1.23	56.7	1=42		0.0037	260	5.9	0.7	0.96	1.06	0.00	0.60	145.40	146.10		148.30	PM
												0.0070	2.22	8.9	0.5							21	142.12	
10	A	0.25	.45	0.11	0.25	0.11	10.0	2.11	0.3	1= 8		0.0008	90	0.9	1.7	0.07	0.00	0.11	0.07	162.19	162.89		166.00	EC
												0.0330	0.18	4.2	0.4							11	161.83	
11	A	0.24	.45	0.11	0.49	0.22	10.4	2.07	0.6	1= 8		0.0029	90	1.7	0.9	0.26	0.02	0.00	0.18	159.28	159.98		163.00	EC
												0.0220	0.27	4.3	0.3							12	158.83	
12	A	0.23	.45	0.10	0.72	0.32	10.7	2.03	0.9	1= 8		0.0061	90	2.5	0.6	0.55	0.00	0.00	0.18	157.41	158.11		161.00	EC
												0.0140	0.40	4.1	0.4							13	156.83	
13	A	0.20	.45	0.09	0.92	0.41	11.1	2.00	1.1	1=18		0.0001	90	0.6	2.4	0.01	0.00	0.00	0.15	156.08	156.78		159.00	EC
												0.0100	0.34	3.7	0.4							14	155.59	
14	A	0.18	.45	0.08	1.10	0.50	11.5	1.96	1.3	1=18		0.0002	91	0.7	2.1	0.02	0.00	0.00	0.14	155.20	155.90		157.00	EC
												0.0100	0.37	3.8	0.4							15	154.69	
15	A	0.17	.45	0.08	1.27	0.57	11.9	1.93	1.5	1=18		0.0002	125	0.8	2.5	0.03	0.00	0.00	0.15	154.32	155.02		157.00	EC
												0.0100	0.39	4.0	0.5							16	153.78	
16	A	0.24	.45	0.11	1.51	0.68	12.4	1.88	1.7	1=18		0.0003	90	1.0	1.6	0.03	0.00	0.00	0.16	153.11	153.81		157.00	EC
												0.0100	0.42	4.1	0.4							17	152.53	

point of connection
Ex 36" 234 ' long

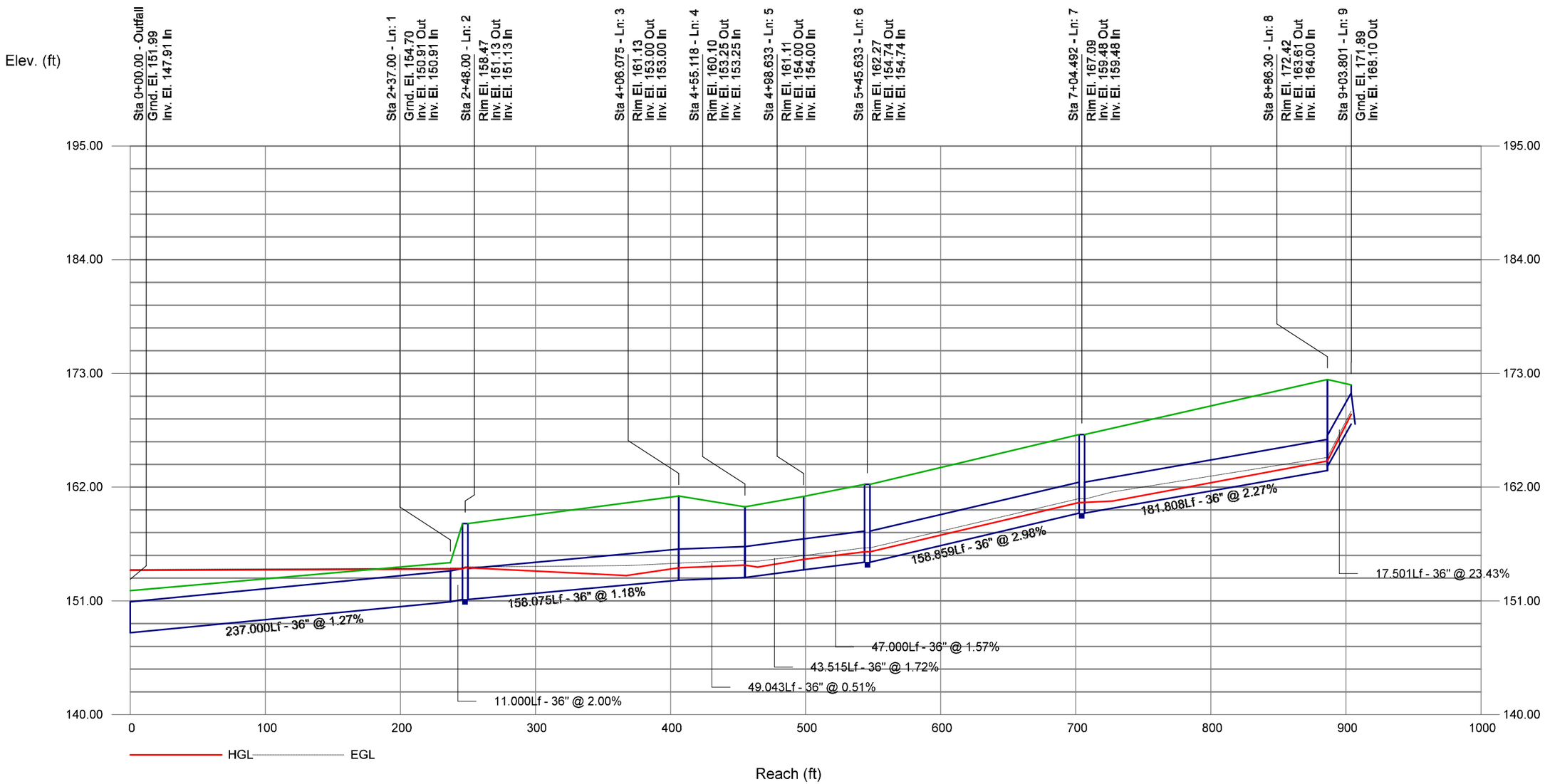
point of connection
Ex CB-1 302' Long

point of connection
Ex 18" 165' Long

Attachment A4

Storm Sewer Profile

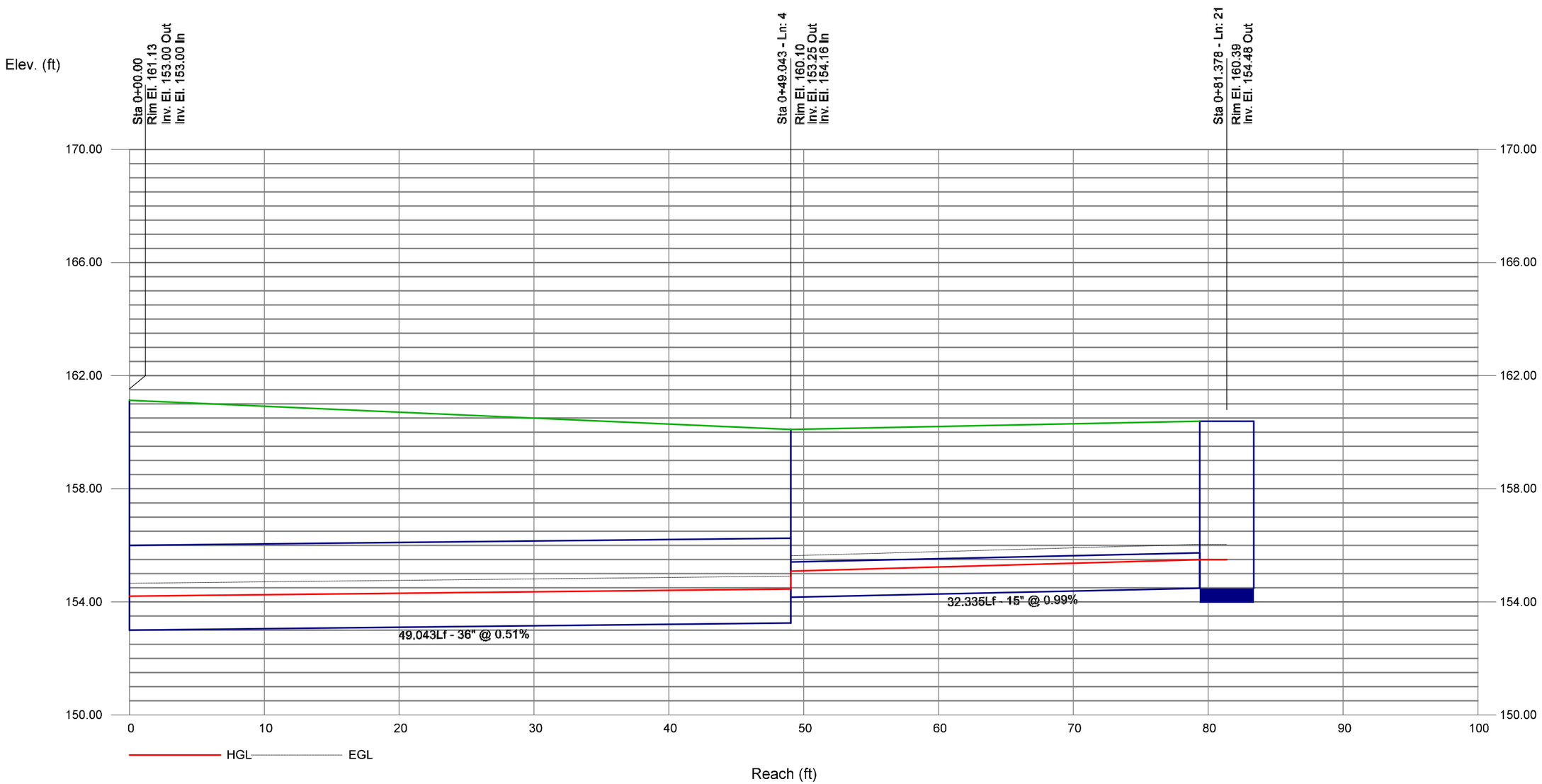
Proj. file: Jensen Lane 10 Yrs.stm



Attachment 2A

Storm Sewer Profile

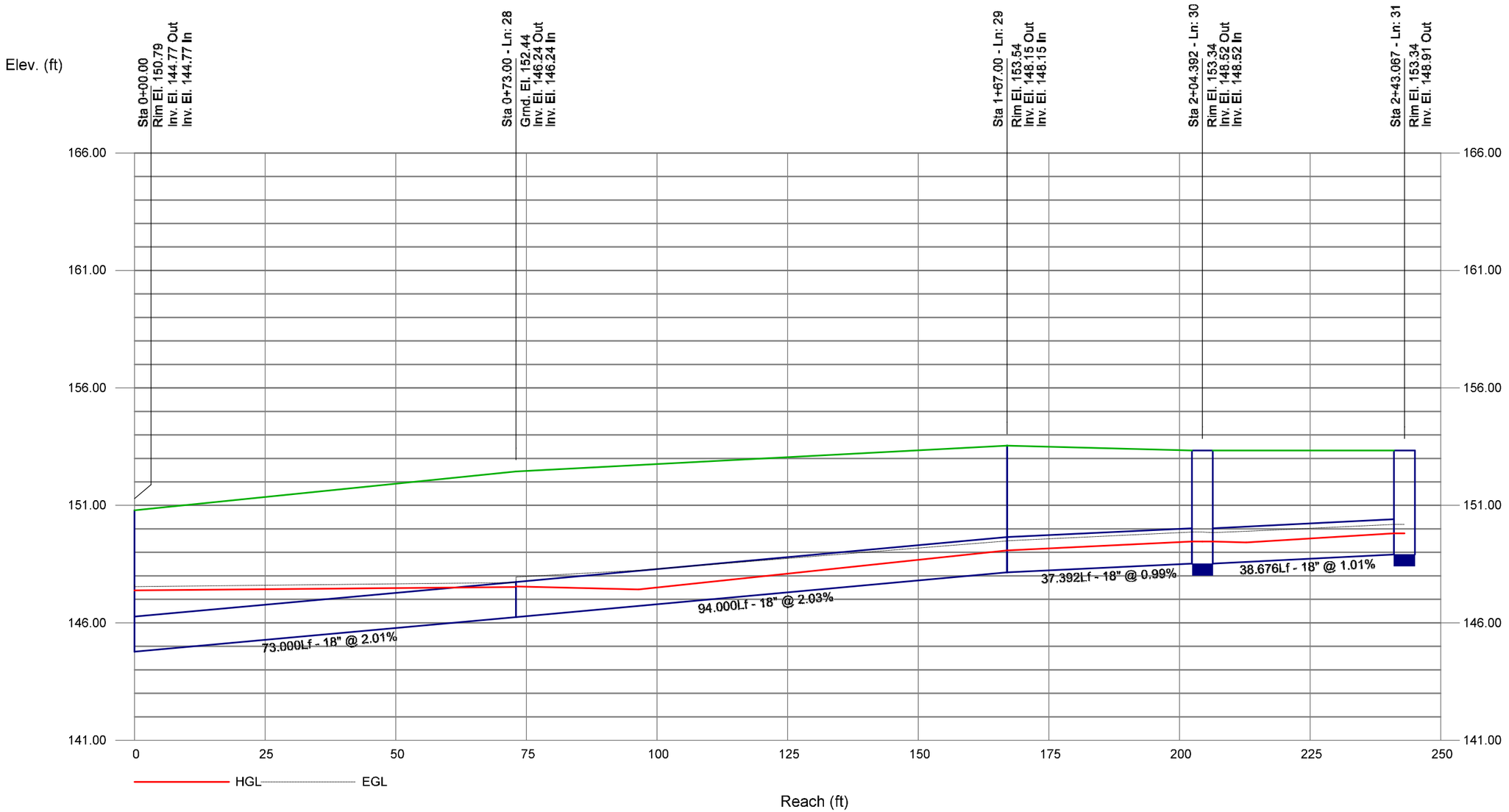
Proj. file: Jensen Lane 10 Yrs.stm



Attachment 2B

Storm Sewer Profile

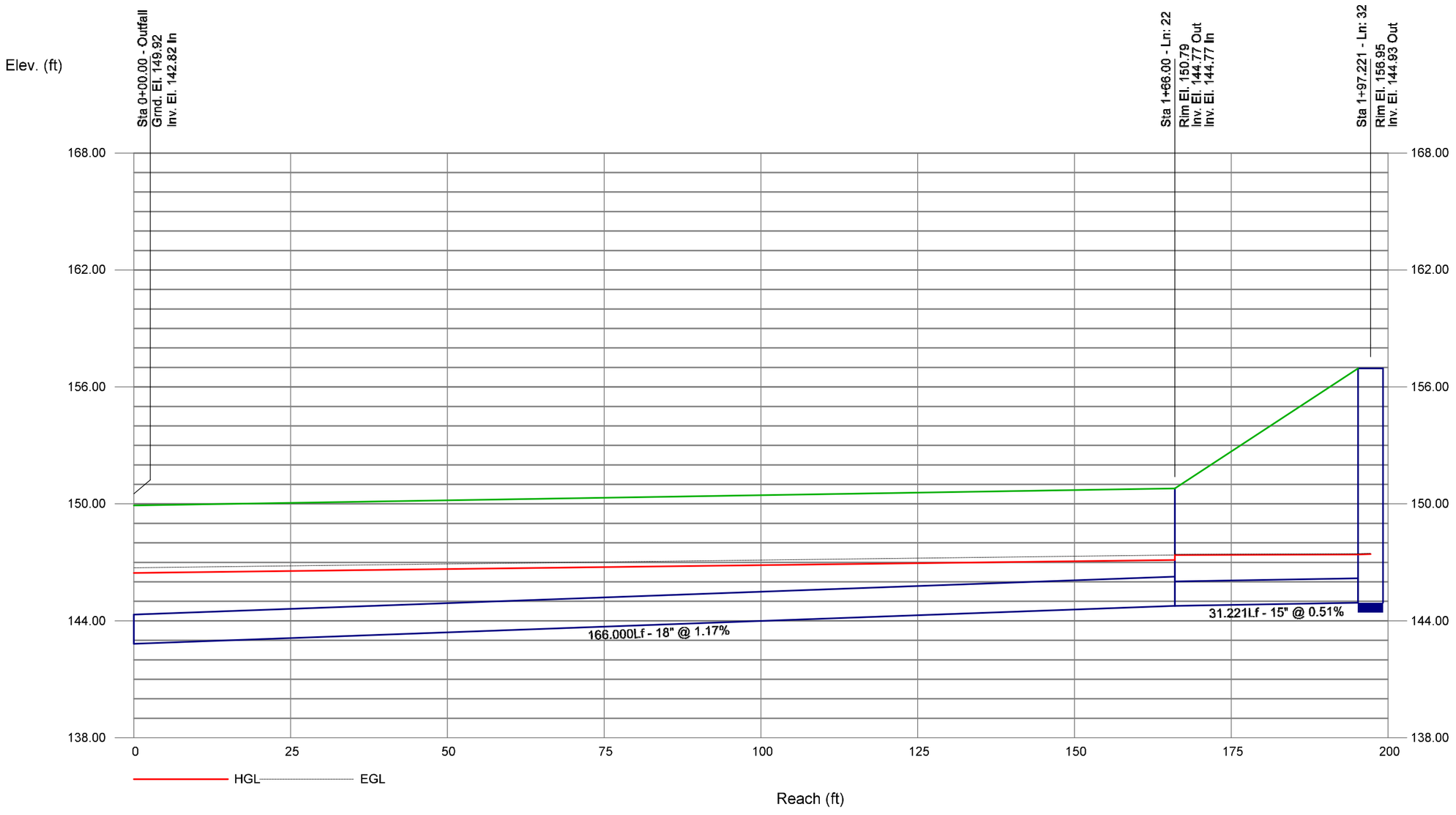
Proj. file: Jensen Lane 10 Yrs.stm



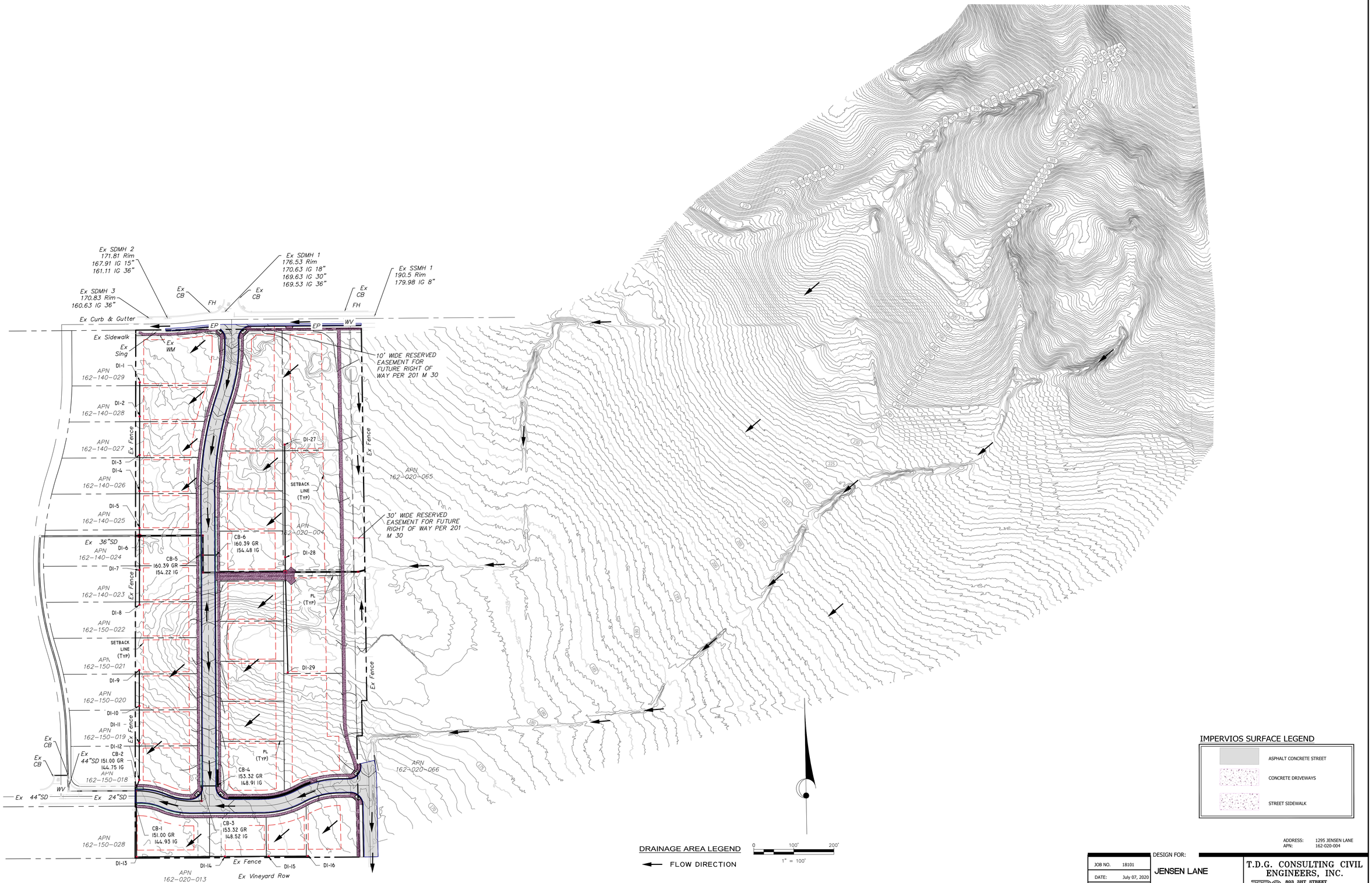
Attachment 2C

Storm Sewer Profile

Proj. file: Jensen Lane 10 Yrs.stm



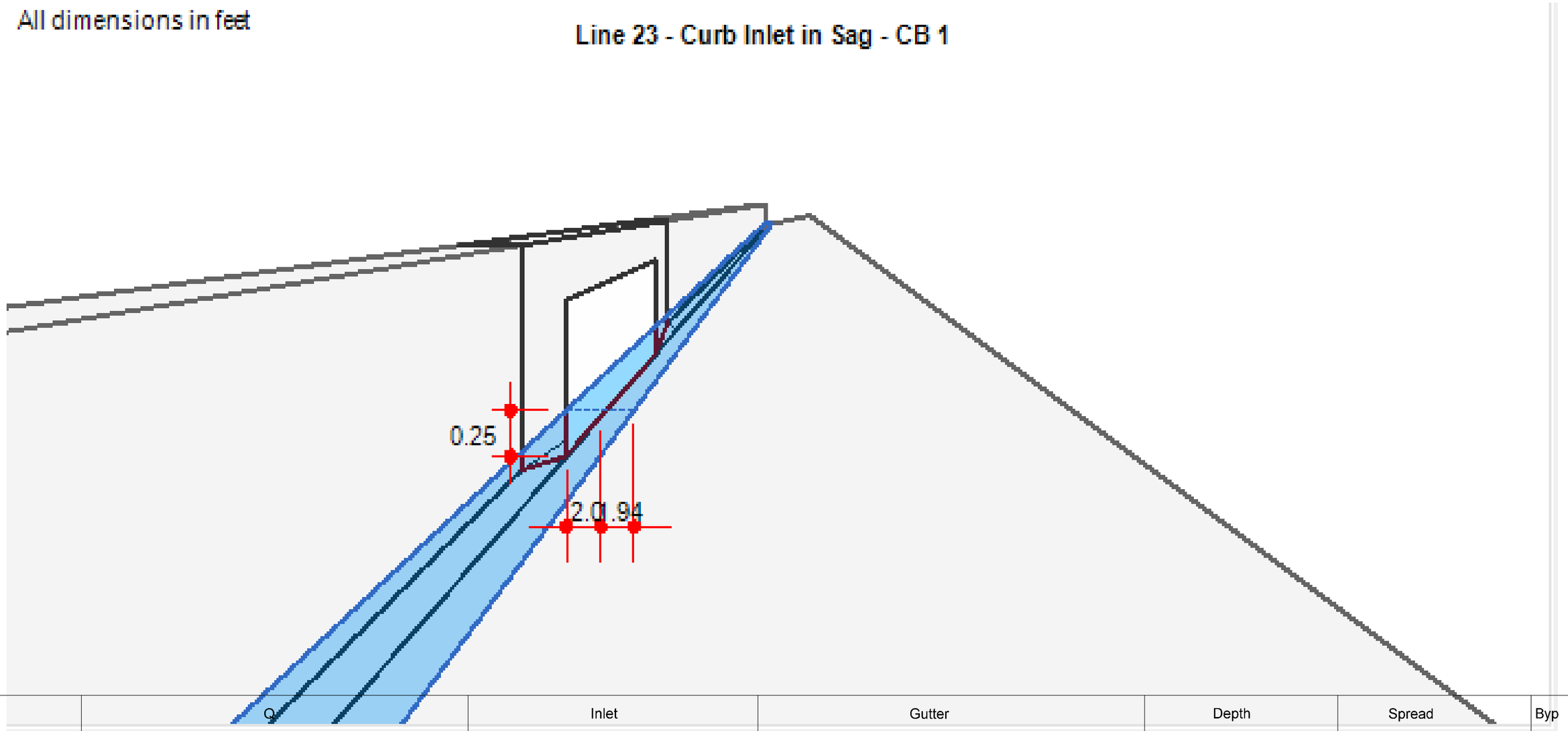
Attachment 2D



Attachment 3

Inlet Section (Line 23 - Curb Inlet) - CB 1

All dimensions in feet

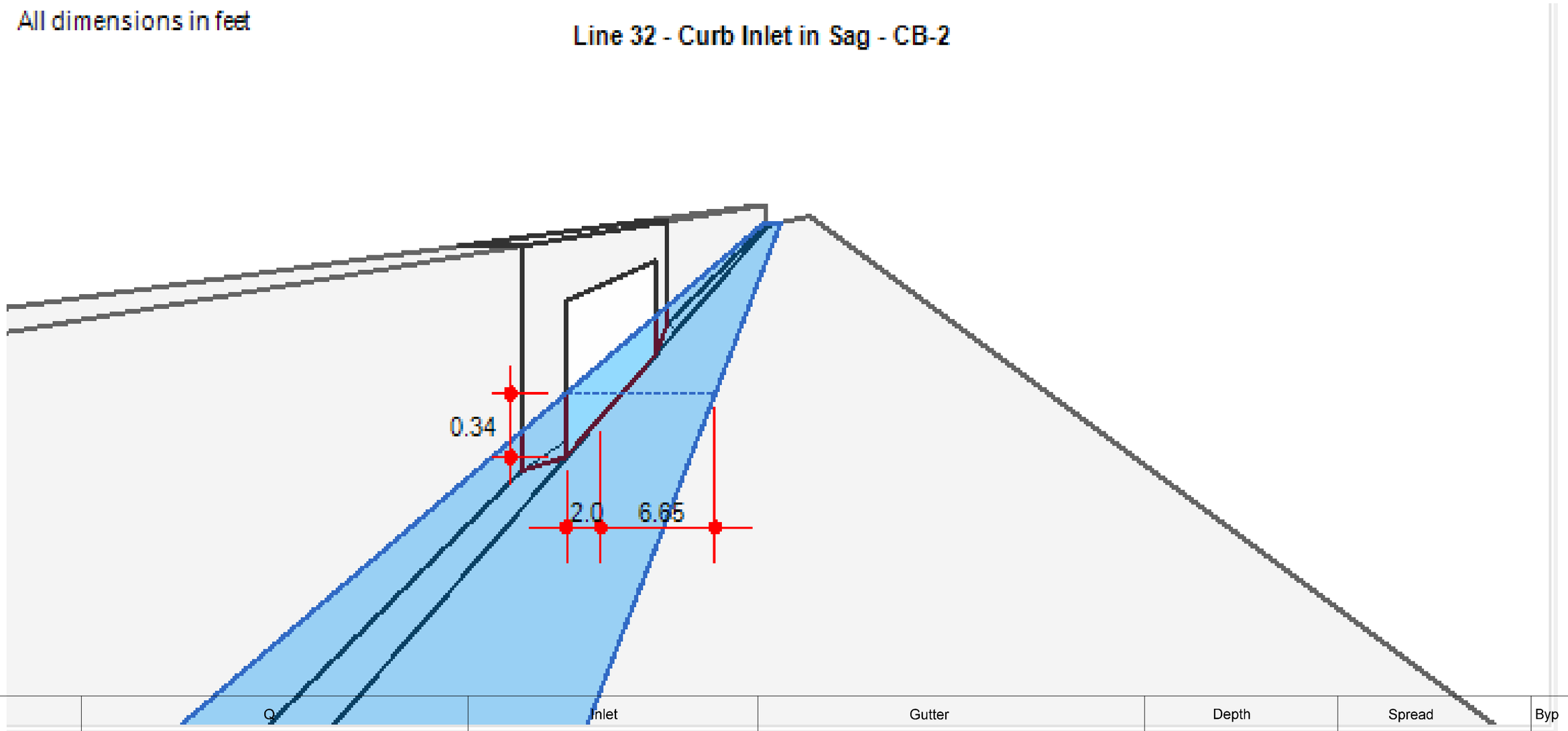


	Q				Inlet			Gutter				Depth		Spread		Byp
Line #	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Length (ft)	Depr (in)	Throat (in)	Width (ft)	Slope (ft/ft)	Sw (ft/ft)	Sx (ft/ft)	Gutter (ft)	Inlet (ft)	Gutter (ft)	Inlet (ft)	Line (ft)
23	0.39	0.00	0.39	0.00	4.00	2.0	6.0	2.00	Sag	0.020	0.020	0.08	3.94	n/a	n/a	Sag

Project File: | No. Lines: 36 | Run Date: 7/7/2020

Inlet Section (Line 32 - Curb Inlet) - CB-2

All dimensions in feet

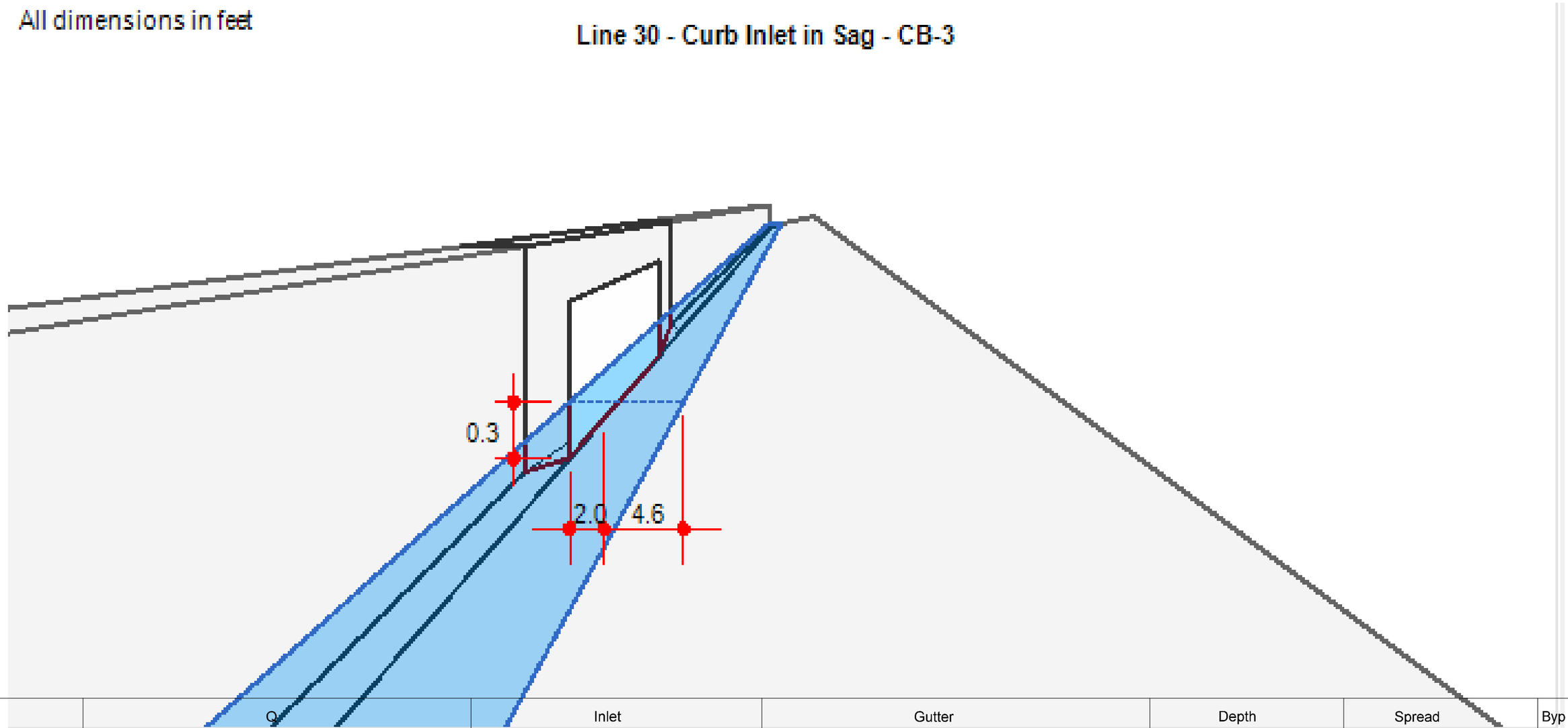


Line #	Q				Inlet			Gutter				Depth		Spread		Byp
	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Length (ft)	Depr (in)	Throat (in)	Width (ft)	Slope (ft/ft)	Sw (ft/ft)	Sx (ft/ft)	Gutter (ft)	Inlet (ft)	Gutter (ft)	Inlet (ft)	Line (ft)
32	1.26	0.00	1.26	0.00	4.00	2.0	6.0	2.00	Sag	0.020	0.020	0.17	8.65	n/a	n/a	Sag

Project File: | No. Lines: 36 | Run Date: 7/7/2020

Inlet Section (Line 30 - Curb Inlet) - CB-3

All dimensions in feet



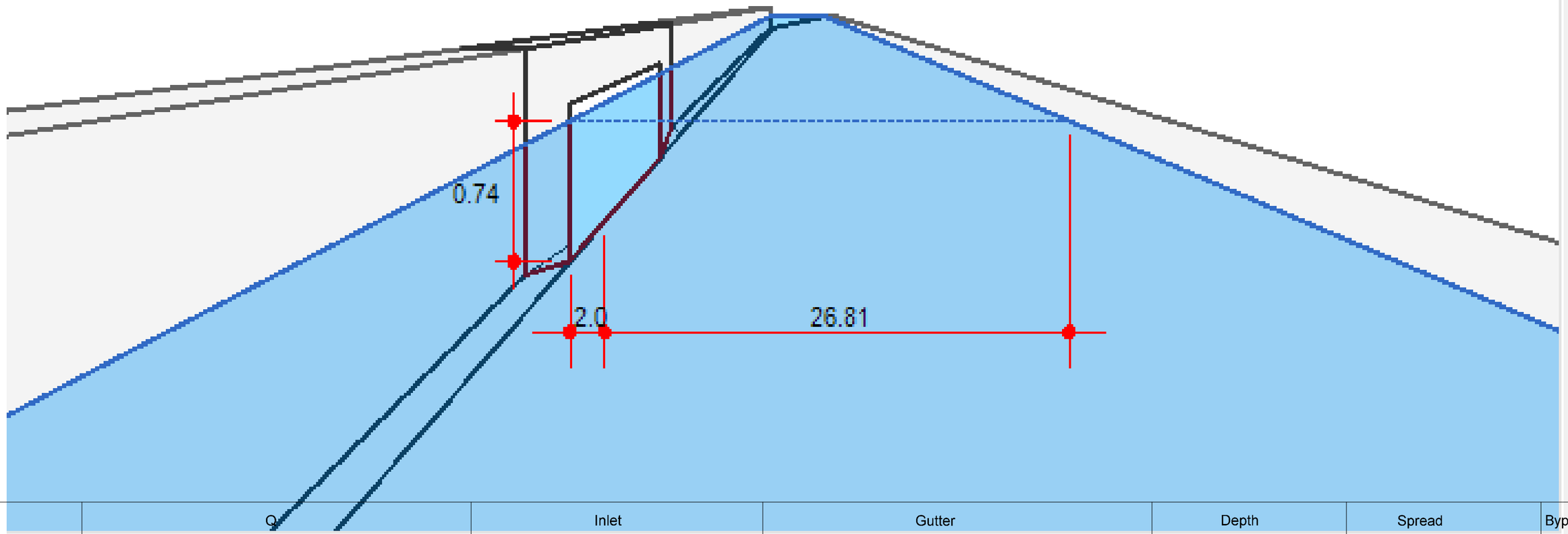
	Q				Inlet			Gutter				Depth		Spread		Byp
Line #	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Length (ft)	Depr (in)	Throat (in)	Width (ft)	Slope (ft/ft)	Sw (ft/ft)	Sx (ft/ft)	Gutter (ft)	Inlet (ft)	Gutter (ft)	Inlet (ft)	Line (ft)
30	0.84	0.00	0.84	0.00	4.00	2.0	6.0	2.00	Sag	0.020	0.020	0.13	6.60	n/a	n/a	Sag

Project File: | No. Lines: 36 | Run Date: 7/7/2020

Inlet Section (Line 31 - Curb Inlet) - CB-4

All dimensions in feet

Line 31 - Curb Inlet in Sag - CB-4

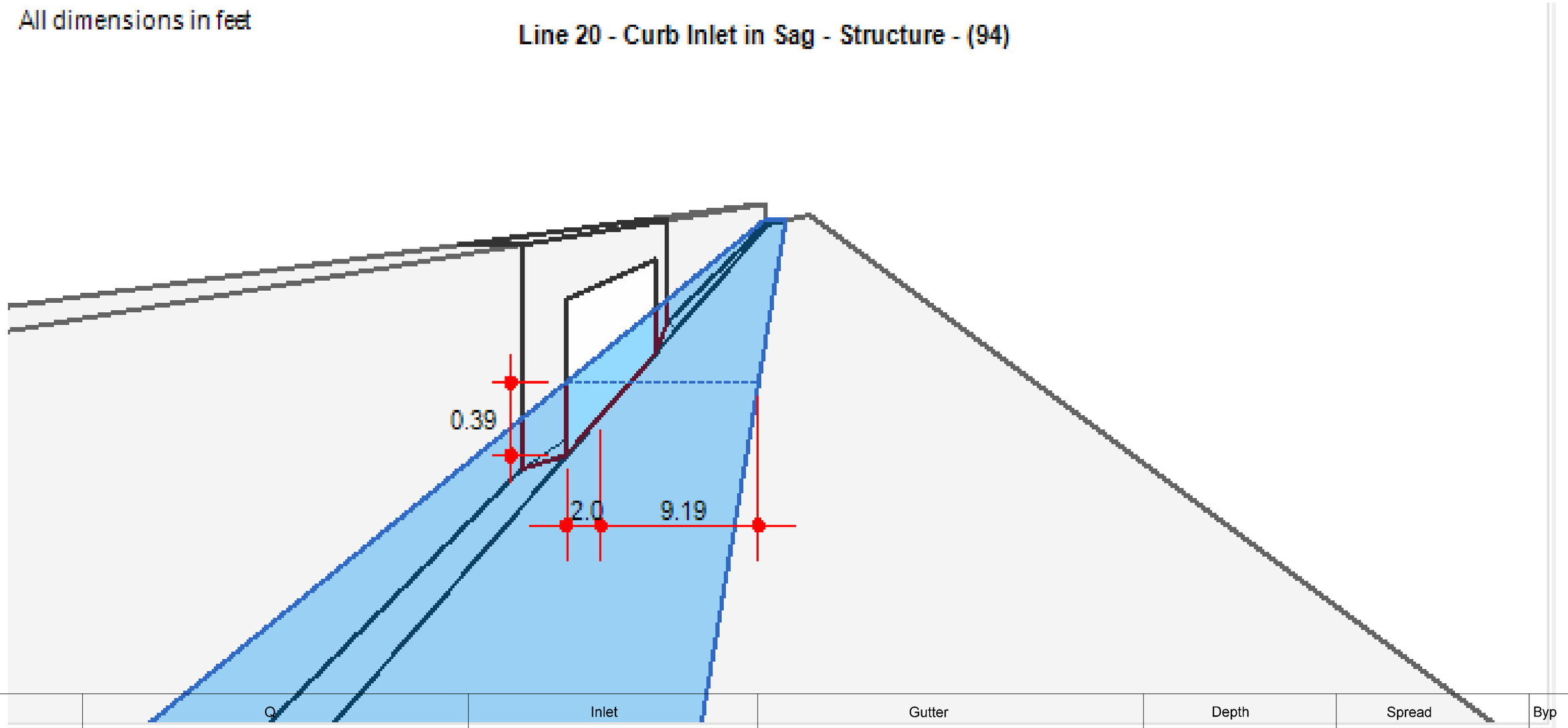


Line #	Q				Inlet			Gutter				Depth		Spread		Byp
	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Length (ft)	Depr (in)	Throat (in)	Width (ft)	Slope (ft/ft)	Sw (ft/ft)	Sx (ft/ft)	Gutter (ft)	Inlet (ft)	Gutter (ft)	Inlet (ft)	Line (ft)
31	7.65	0.00	7.65	0.00	4.00	2.0	6.0	2.00	Sag	0.020	0.020	0.58	28.81	n/a	n/a	Sag

Project File: | No. Lines: 36 | Run Date: 7/7/2020

Inlet Section (Line 20 - Curb Inlet) - Structure - (94)

All dimensions in feet

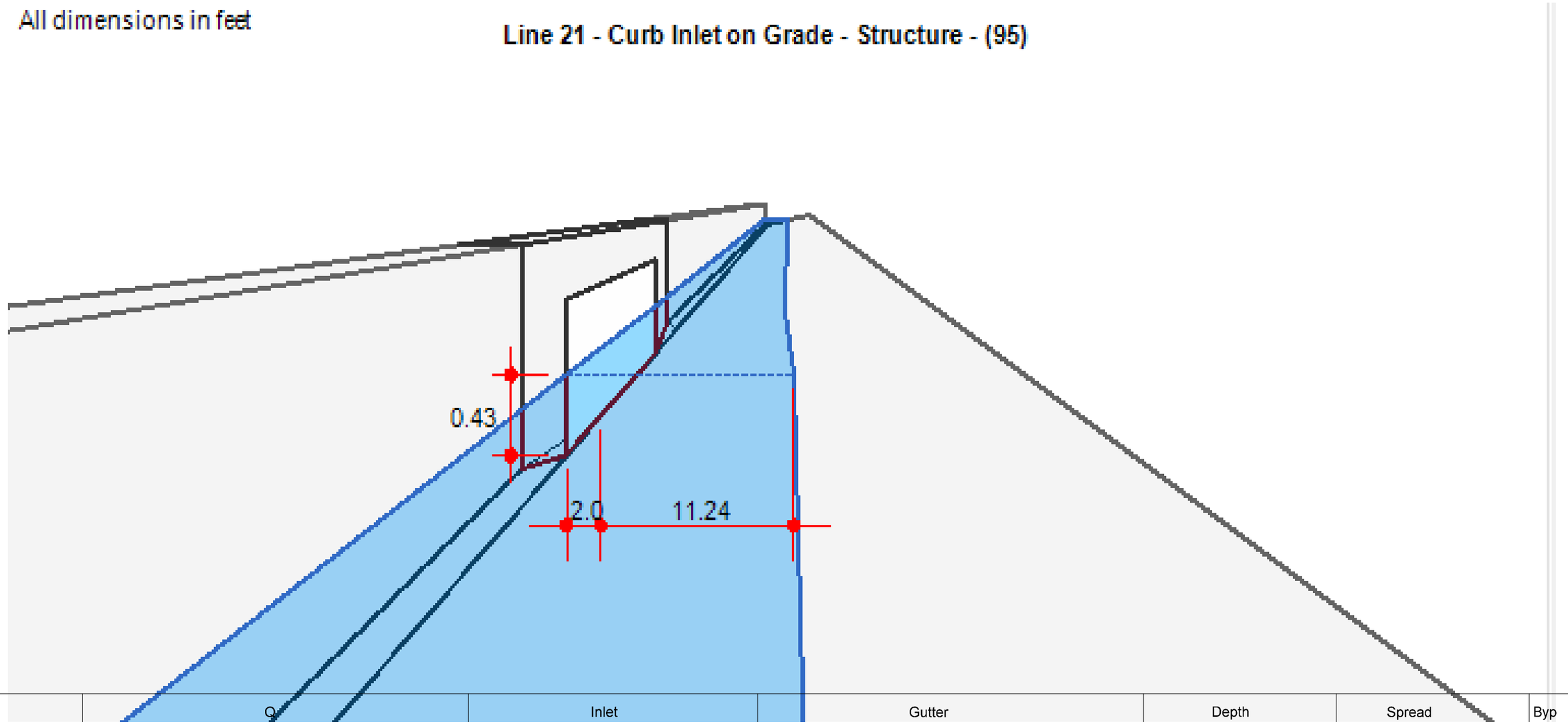


Line #	Q				Inlet			Gutter				Depth		Spread		Byp
	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Length (ft)	Depr (in)	Throat (in)	Width (ft)	Slope (ft/ft)	Sw (ft/ft)	Sx (ft/ft)	Gutter (ft)	Inlet (ft)	Gutter (ft)	Inlet (ft)	Line (ft)
20	1.85	0.00	1.85	0.00	4.00	2.0	6.0	2.00	Sag	0.020	0.020	0.22	11.19	n/a	n/a	Sag

Project File: | No. Lines: 36 | Run Date: 7/7/2020

Inlet Section (Line 21 - Curb Inlet) - Structure - (95)

All dimensions in feet



	Q				Inlet			Gutter				Depth		Spread		Byp
Line #	Catch (cfs)	Carry (cfs)	Capt (cfs)	Byp (cfs)	Length (ft)	Depr (in)	Throat (in)	Width (ft)	Slope (ft/ft)	Sw (ft/ft)	Sx (ft/ft)	Gutter (ft)	Inlet (ft)	Gutter (ft)	Inlet (ft)	Line (ft)
21	8.81	0.00	1.60	7.21	4.00	2.0	6.0	2.00	0.020	0.020	0.020	0.26	13.24	0.25	12.29	Offsite

Project File: | No. Lines: 36 | Run Date: 7/7/2020

DESIGN CRITERIA

1. GATE IS IN SUMP AREA (LOW POINT)

2. Q= 1/2 PERIMETER IN FEET (ASSUME 35→40 PERCENT OF THE PEREMETER IS BLOCKED WITH DEBRIS AND 10→15 PERCENT IS TAKEN UP BY THE GRATE BEARING BARS)

3. A=CI = AREA IN ACRES

WHERE
Q= WEIR DISCHARGE IN C.F.S
C= 0.9 FOR PAVED AREAS
I= 2.1 INCHES PER HOUR FOR FOR T = 10 MINUTES

S.R.C.P MODEL	INSIDE GRATE DIMENSION a" x b"	P=a+b IN FEET	H=0.1'		H=0.2'		H=0.3'		H=0.4'	
			Q cfs	Acres	Q cfs	Acres	Q cfs	Acres	Q cfs	Acres
EK	12X12	2.00	0.19	0.10	0.54	0.28	0.99	0.52	1.52	0.80
BK	16X16	2.67	0.25	0.13	0.72	0.38	1.32	0.70	2.03	1.07
IK	16X24	3.33	0.32	0.17	0.89	0.47	1.64	0.87	2.53	1.34
2K	24X24	4.00	0.38	0.20	1.00	0.57	1.97	1.04	3.04	1.61
3K	24X30	4.50	0.43	0.23	1.21	0.64	2.22	1.17	3.42	1.81
5K	30X30	5.00	0.47	0.25	1.34	0.71	2.46	1.30	3.79	2.01
IL	24X36	5.00	0.47	0.25	1.34	0.71	2.46	1.30	3.79	2.01
IM	36X36	6.00	0.57	0.30	1.61	0.85	2.96	1.56	4.55	2.41
3L	24X48	6.00	0.57	0.30	1.61	0.85	2.96	1.56	4.55	2.41
3M	36X48	7.00	0.66	0.35	1.88	0.99	3.45	1.83	5.31	2.81
IR	48X48	8.00	0.76	0.40	2.15	1.14	3.94	2.09	6.07	3.21

LOT 1 : 3K
LOT 2 : BK
LOT 3 : BK
LOT 4 : BK
LOT 5 : BK
LOT 6 : BK
LOT 7 : BK
LOT 8 : BK
LOT 9 : BK
LOT 10 : BK
LOT 11 : BK
LOT 12 : IK
LOT 13 : IK
LOT 14 : BK
LOT 15 : EK
LOT 16 : IK
LOT 27 : 2K
LOT 28 : 2K
LOT 29 : IK

COUNTY ASSESSOR'S PARCEL MAP

TAX RATE AREA
179-049 9-000
9-004

162-02

NOTE: This map was prepared for Assessment purposes only and does not indicate either parcel legality or a valid building site. No liability is assumed for the accuracy of the data delineated. The acreages are based on the information supplied to the Assessor (i.e. recorded survey maps recorded deeds, prior assessment maps, etc.)

NOTE: Assessor's parcels do not necessarily constitute legal lots. To verify legal parcel status, check with the appropriate city or county community development or planning division.

SCALE: 1"=600'

REVISED
02-09-09=Cor-NJF
11-10-09=AgPre-NJF
01-21-10=68-NJF
02-02-10=Cor-NJF
04-11-11=R/S-NJF
02-29-16=11-KB
03-01-17=CorInfo-KB

RIDGEVIEW ESTATES
VINTAGE HILLS
LANE (VINECREST ROAD)
JENSEN LANE
HEMBREE LANE
SHADETREE DRIVE
HIGHWAY 101
CHALK HILL ROAD
PLEASANT AVENUE
CENTER SEC 7
CENTER SEC 18
T.8N.,R.8W.
T.8N.,R.9W.

Lot 1
Lot 2 — 4 — 17.18 Ac.
Pcl 2 — 67 — 20.6 Ac. Remainder — Ag Pre 1-519 09-086559
65 — 10.1 Ac.
7 — 37.0 Ac. — Ag Pre 2-222-78 3051-052
Lot 2 — 66 — 17.41 Ac. — Pcl 1
PM4082
PM4130 — Pcl 1 — 14 — 27.90 Ac.
13 — 30.79 Ac.
12
23 — 4.83 Ac.
24
PM87-366
PMMNS02-0013
PM3239
9 — 2
10 — 1
8 — 3
R/S 706/17
R/S 651/3-4
R/S 134/33
R/S 466/39
R/S 120/30
R/S 370/22
R/S 740/25
PM5549 — 1 — 2 — 27 — 3.27Ac. — 28 — 3.2Ac.
3 — 44 — 3.26Ac. — 4 — 43 — 3.2Ac.
68 — 44.72 Ac
51 — 5.08Ac — 42 — 4.19Ac
48 — 16.87Ac
49 — 4.5Ac
50 — 3.5Ac — 39 — 3.0Ac
40 — 3.27Ac
37
PMMNS99-0016 — 64 — 10.27Ac
Lot 3 — 63 — 10.0Ac
Lot 2 — 62 — 10.02Ac.
Lot 1 — 36 — 1.27Ac
PM2904 — 2 — 1 — 31 — 2.5Ac. — 32 — 1.47Ac — 34 — 2.5Ac — 33 — 1.03Ac
PM3138 — 2 — 1 — 35 — 1.0Ac

Parcel Map No. 5549
REC. 02-16-78 IN BK. 265, MAPS, PGS. 28 - 00

Parcel Map No. 875-A
REC. 06-25-69 IN BK. 133, MAPS, PGS. 11 - 00

Parcel Map No. 3138
REC. 06-12-72 IN BK. 173, MAPS, PGS. 39 - 00

Parcel Map No. 3239
REC. 10-27-72 IN BK. 181, MAPS, PGS. 35 - 00

Parcel Map No. 2904
REC. 02-05-73 IN BK. 186, MAPS, PGS. 35 - 00

Parcel Map No. 1858
REC. 05-08-70 IN BK. 144, MAPS, PGS. 27 - 00

Parcel Map No. 4130
REC. 11-01-73 IN BK. 199, MAPS, PGS. 20 - 00

Parcel Map No. 4082
REC. 12-11-73 IN BK. 201, MAPS, PGS. 30 - 00

Parcel Map No. 86-650
REC. 10-28-87 IN BK. 407, MAPS, PGS. 5 - 7

Parcel Map MNS 99-0016
REC. 10-29-02 IN BK. 641, MAPS, PGS. 35 - 37

Parcel Map MNS 02-0013
REC. 10-07-05 IN BK. 682, MAPS, PGS. 21 - 24

Parcel Map No. 87-366
REC. 09-23-88 IN BK. 425, MAPS, PGS. 14 - 16

Assessor's Map Bk. 162, Pg. 02
Sonoma County, Calif. (ACAD)

KEY 4/14/09 NJF

0 50 100 200

Appendix D

Roadway Construction Noise Model Results

Roadway Construction Noise Model (RCNM),Version 1.1

Report date########
Case Descri1295 Jensen

			---- Receptor #1 ----
	Baselines (dBA)		
DescriptionLand Use	Daytime	Evening	Night
50 foot receptor	65	60	55

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Dozer	No	40		81.7	50	0
Front End Loader	No	40		79.1	50	0

Results

	Calculated (dBA)		Noise Limits (dBA)						Noise Limit Exceedance (dBA)					
			Day		Evening		Night		Day		Evening		Night	
Equipment	*Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Dozer	81.7	77.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	81.7	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Appendix E

2040 General Plan Policies Referenced in Initial Study

2040 General Plan Policies Referenced

Element	Policy Number	Policy
Design to Protect Night Skies	LU-1.13	The Town shall protect dark/night skies by requiring outdoor lighting to be shielded and/or directed downward to limit overspill and glare, without compromising the safety and security of the community, through implementation of lighting standards in a "Dark Skies" ordinance with the Model Lighting Ordinance approved by the International Dark-Sky Association and the illuminating Engineering Society of North America.
Design for Livable Environments	LU-1.6	The Town shall maintain design standards and create form-based codes or form-based design standards for specific areas that promote walkable and livable environments.
Compatible Design	LU-1.7	The Town shall encourage new residential development within existing neighborhoods to include building designs that provide diversity while maintaining compatibility with the scale, massing, and heights of the existing homes. Criteria for determining compatible development are defined in design standards for the Town or in form-based codes for specific areas.
Transitions in Scale	LU-1.8	The Town shall require that the scale and massing of new development in higher-density areas provide appropriate transitions in building height and bulk and are sensitive to the physical and visual character of adjoining lower-density neighborhoods.
Recycled Water	PFS-2.5	The Town shall continue to support the beneficial reuse of recycled water and the joint use of facilities including reservoir, distribution mains, and pumping facilities for the use of recycled water when such joint use benefits the environment.
2020 Water Conservation Targets	PFS-2.6	The Town shall achieve a 20 percent reduction in per-capita water use by 2020 consistent with the State's 20x2020 Water Conservation Plan.
Conservation Efforts	PFS-2.8	The Town shall continue to require the use of water-conserving plumbing fixtures, such as low-flow toilets and showerheads, and water-efficient dishwashers and washing machines in all new development.
Water Efficient Landscaping	PFS-2.9	The Town shall require new development to incorporate and implement a whole systems approach to design, construction, installation and maintenance of the landscaping so as to result in water conserving, climate-appropriate landscapes, improved water quality and the minimization of natural resource inputs.
Stormwater Management Plan	PFS-4.1	The Town shall maintain and implement a Stormwater Management Plan, which is designed to protect water quality through implementation of best management practices for stormwater runoff from development.
Low Impact Development	PFS-4.3	The Town shall provide requirements for Low Impact Development (LID) techniques for reducing pollutants in stormwater from new development and reconstruction projects and implement LID in conjunction with the policies specified by the State Water Resources Control Board (SWRCB) and National Pollutant Discharge Elimination System (NPDES) Permit regarding stormwater runoff, treatment and collection.
Education on Stormwater Runoff Effects	PFS-4.4	The Town shall encourage educational opportunities for citizens regarding stormwater runoff, its impacts to water quality, and strategies to mitigate impacts.
Construction Activities and Grading Effects on Water Quality	PFS-4.5	The Town shall develop and implement policies that support erosion control and reduce water quality impacts resulting from grading and construction activities.
Waste Management	PFS-5.1	The Town shall continue to improve its solid waste management system through emphasis on waste prevention, reuse, recycling, composting, and disposal.

Recycling Collection	PFS-5.6	The Town shall require all projects, except for single family residential, to provide sufficient and accessible space for the storage and collection of recyclable materials and organic waste separate from, and in addition to, space for refuse storage and collection.
2020 Recycling Target	PFS-5.8	The Town shall support efforts to recycle at least 75 percent of solid waste by 2020 (AB 341) and shall work with the Town's franchise waste hauler and regional waste authorities toward a goal of 90 percent waste reduction.
New Library	PFS-10.4	The Town shall encourage the replacement of the existing Windsor Regional Library in Downtown adjacent to existing public facilities, parks, schools, and/or the government center through the Library JPA facilities maser planning process, in order to concentrate community activity and cultural attractions near the Civic Center and colocate uses for cost-effective and efficient use of parking and civic infrastructure.
Sensitive Habitat Preservation	ER-1.2	The Town shall encourage the preservation of sensitive environmental habitat areas, such as oak woodlands, productive farmlands, riparian (creekside) corridors, and important wildlife movement corridors through measures such as clustering development and conservation easements.
Reducing Development in Significant Threat Areas	ER-1.3	The Town shall ensure that areas that pose significant threats to public health and safety, such as steep slopes, regulatory floodways, and the Alquist-Priolo Special Study Zone, are pre-dominantly maintained as open space.
Agricultural Buffers.	ER-2.2	Proposed new development that would be adjacent to existing agricultural properties should include buffers onsite to protect the continued viability of the neighboring agriculture and to minimize adverse effects of agricultural operations. If the existing agricultural property lies outside the Urban Growth Boundary, then the onsite buffer should be permanent and composed of predominantly native and low water-using species, or other appropriate perimeter screening should be required. The Town should allow and encourage the productive use of buffers for appropriate uses, where legally permissible, such as bike trails, rather than requiring buffers to be idle open space. The size of the buffer will be determined by parcel specific review for all new development adjacent to agricultural property, with a width not to exceed 200 feet. If however, the existing agricultural property lies inside the Urban Growth Boundary and is anticipated to be converted to another non-agricultural use designation according to the General Plan, then the buffer would be temporary. When the interim agricultural area is converted to the nonagricultural use designation, the intermediate buffer area may convert to its underlying land use designation.
Development Along Creeks	ER-3.2	The Town shall protect, preserve, and improve creeks by requiring that development activities along creeks be conducted using Low Impact Development (LID) principles, appropriate creek setbacks, and Best Management Practices that seek to minimize the discharge of sediments and urban pollutants into the waterways and that are consistent with the NPDES permit.
State and Federal Water Quality Programs	ER-3.4	The Town shall actively support its stormwater NPDES permit by developing and implementing programs for improving and maintaining water quality.
Coordination of Water Standards and Management	ER-3.5	The Town should actively support Federal and State laws pertaining to the Clean Water Act, Porter-Cologne Water Quality Control Act, and Sustainable Groundwater Management Act in attainment of water quality standards and management of surface water and groundwater.
Reduced Emissions for Town Operations	ER-5.7	The Town shall promote reduced idling, trip reduction, routing for efficiency, carpooling, walking/biking and electric vehicle use for its transportation needs for Town operations.

Prohibition of Certain Activities in Riparian Habitats.	ER-6.6	The Town shall prohibit dumping or disposal of refuse; confinement of livestock; and structural improvements except necessary water supply projects, flood control projects, fish and wildlife enhancement projects, trail projects, road and bridge projects, and utility projects in significant riparian areas.
Development Guidelines along Scenic Corridors	ER-9.2	The Town shall ensure that development proposals along scenic corridors do not detract from public viewpoints, are protected, and are harmonious and subordinate to the natural features that comprise the scenic viewshed. The Town shall require developers include components of project design that shall be considered in making this assessment include building height, massing, orientation, color, building materials, rooftop appurtenances, storage areas, signage, lighting, and low-water landscaping. The purpose of detailed development review along these corridors is to ensure that development within the viewshed preserves and enhances attractive natural and man-made vistas.
Development Guidelines along Rural Lanes	ER-9.3	The Town shall require development along scenic public roadways, such as Rural Lanes, to preserve significant public views of the surrounding foothills as well as mature vegetation that contributes to the rural atmosphere.
Development on Steep Slopes	PHS-2.2	The Town shall discourage development in areas with slopes of 20 percent or greater to reduce the potential impacts of erosion and slope instability. New development proposed on slopes of 20 percent or greater shall provide an assessment of the site slope stability, susceptibility to landslide, and erodibility prepared by a certified engineering geologist. The Town shall require mitigation measures as necessary based on the site assessment.
Development Review for Hazards	PHS-2.3	The Town shall consider the potential danger to health, safety, and welfare of Windsor residents and businesses in its review of development applications and seek to have hazardous conditions mitigated to an acceptable level. When development is proposed in or near a known hazard area, a technical analysis (e.g., geotechnical report, flood analysis, structural engineering report) shall be completed.
Building Code Compliance	PHS-2.4	The Town shall continue to comply with the prevailing version of the California Code of Regulation.
Geotechnical Hazards Report	PHS-2.7	For parcels that partially lie within seismically active areas that are designated with the extreme or heavy ground shaking intensity areas shown in Figure PHS-1 or that are susceptible to liquefaction shown in Figure PHS-2, the Town shall require a geotechnical hazards report, prepared by a certified engineering geologist or geotechnical engineer, to identify the most appropriate building areas and corrective measures to minimize potential hazards. Recommendations from these investigations, or equivalent measures deemed acceptable by the Town, shall be incorporated as conditions of any project approval.
Proper Storage and Disposal of Hazardous Materials	PHS-5.1	The Town shall require proper storage and disposal of hazardous materials to prevent leakage, potential explosions, fires, or the escape of harmful gases, and to prevent individually innocuous materials from combining to form hazardous substances, especially at the time of disposal.
Hazardous Waste Disposal	PHS-5.4	The Town shall encourage the community to dispose of toxic substances at the Central Disposal Site in Petaluma or through one of the Community Toxic Collection days.
Sensitive Uses	PHS-5.5	The Town shall require new developments that use or store hazardous materials and that are on sites in close proximity to creeks to include mitigation measures to prevent contamination of the creeks in the event of an accident or spill.
Onsite Contamination Constraints	PHS-5.9	In future land use decisions, the Town shall consider the constraints imposed by the potential for site contamination by present or past activities that used, stored, or disposed of hazardous materials or wastes. The Town shall restrict any use that could allow human exposure to such contamination or shall require remediation

		and/or mitigation efforts to reduce the health risks to acceptable levels prior to issuance of a building permit.
Rainwater Harvesting	PHS-7.10	The Town shall encourage rainwater harvesting design options in new development and retrofitting in existing development.